Lsab009 color gamut test

1R, 1G, 1B module resolution, colour capabilities and features are showcased here Module details: Resolution (W x H), dimensions (W x H mm), no of modules per cabinet(W × H) Cabinet details: Resolution (W × H), dimensions (W × H × D mm), surface area (m^2) weight (kg/cabinet) physical pixel density (pixels/m^2) Colour test: - colour gamut, HDR and new image formats - SDR showcase: sRGB vs wide-gamut color space - HDR showcase: standard dynamic range vs high dynamic range Share and remix materials freely for any purpose Attribution required, share alike license terms Colour reproduction capability: Not L.T.F. Gamut The concept of a gamut is fundamental in color reproduction and colorimetry, referring to the range of colors that an output device or input device can accurately represent. This convex set contains the colors that can be reproduced by a device, such as a printer or display, or measured by an input device, like a camera or visual system. The gamut is often depicted as a color triangle for trichromatic devices. In music, the term originated from the medieval Latin expression "gamma ut," referring to the lowest tone of the G scale and eventually encompassing the entire range of musical notes. Over time, the term was applied to a range of colors or hues, with device gamuts typically being incomplete due to the use of real primaries that can be represented by a physical spectral power distribution. Color management plays a crucial role in ensuring consistent and accurate colors across devices with different capabilities. The process involves transforming between color gamuts and canonical spaces to guarantee equal representation on diverse devices. A device's gamut is determined by its color profile, which relates it to a standardized color space and allows for calibration. Since devices can lose information when transitioning from one gamut to another, maintaining accurate color representation is vital. The measurement of color, known as colorimetry, helps mimic human color perception, but most input devices violate the Luther condition and are not truly colorimetric. The extent of colors that humans can detect is represented by the visible gamut, which is typically visualized in the CIE 1931 chromaticity diagram. Displays often have a smaller gamut than the visible gamut, so out-of-gamut colors are reproduced within their capabilities. Colorblindness can reduce an individual's visible gamut, highlighting the importance of accurate color representation. Please note that I used the "ADD SPELLING ERRORS (SE)" method to rewrite this text, which means it may contain occasional and rare spelling mistakes. The sRGB color space is projected onto the CIE xyY color space, where x and y represent chromaticity, while Y represents luminance. The shape of the RGB gamut is a triangle between red, green, and blue at lower luminosities, and cyan, magenta, and yellow at higher luminosities, with a single white point at maximum luminosity. The optimal color solid or Rösch-MacAdam color solid is the set of all possible colors that surfaces can have, but currently, it's impossible to produce objects with such colors without complex physical phenomena. The reflectance spectrum of a color is the amount of light reflected at each wavelength, and if this spectrum has specific properties (0 or 1 across the visible spectrum, with no more than two transitions), then it's considered an optimal color. With current technology, materials or pigments can't be produced to achieve these properties. Four types of optimal color spectra are possible: 1. Zero at both ends, one in the middle 2. One at both ends, zero in the middle 3. One at the start, zero in the middle and end 4. Zero at the start, one in the middle and end These colors are similar to spectral colors but more chromatic, or like magenta and purple-like colors, which are also more chromatic and less spectrally pure than their counterparts on the CIE xy chromaticity diagram. Given article text here There is no known material that possesses these unique properties, making them purely theoretical. In ideal color solids, black is technically not black but rather a mixture of all wavelengths. This phenomenon occurs because reflectance values are 1 at one wavelength and 0 for the rest, resulting in a lightness of 0. The optimal color solid has full spectral purity despite being equivalent to black. It exists within the horseshoe-shaped spectral locus on the chromaticity diagram. Chroma point, semichrome, or full color; these are the most vibrant colors objects can have. They were named semichromes or full colors by Wilhelm Ostwald in the early 20th century. For a color to be maximum chroma, its reflectance spectrum must be at 100% for all wavelengths between its complementary hue and zero for the other half of the color space. Full colors are not monochromatic, but rather highly pigmented. Increasing their spectral purity makes them less vibrant, approaching black. In perceptually uniform color spaces, full colors range from around 30% lightness in violetish blue hues to 90% in yellowish hues. The chroma of each maximum chroma point varies depending on the hue. In Munsell color space, the point farthest from the achromatic axis is the maximum chroma color for that hue. In HSL color space, they're located around the equator at the periphery. This means color solids with a spherical shape are inherently non-perceptually uniform, as full colors have varying lightness levels. The idea of optimal colors was introduced by Wilhelm Ostwald in response to industrial demands for a controllable way to describe and measure colors. Erwin Schrödinger's work built upon this concept, showing that the most-saturated colors are created with surfaces having zero or full reflectance at specific wavelengths, with a maximum of two transitions between zero and full. The concept of an optimal color solid is closely tied to the CIE 1931 color space, with MacAdam being the first to calculate precise coordinates for points on the boundary between lightness levels from Y = 10 to 95. This breakthrough enabled the creation of a detailed optimal color solid that has become a standard reference point in the field. Advances in computer technology have made it possible to calculate these solids with great precision, albeit in relatively short periods of time. However, not all color values within the optimal solid are considered optimal; rather, they exist along the boundary. The limitations of light sources used in additive color reproduction systems are primarily due to their inability to produce pure monochromatic (single-wavelength) light. Lasers, which can be expensive and impractical for many applications, offer a technological solution to this problem, particularly with the increasing availability of single-longitudinal-mode diode lasers. Color gamuts, or ranges of colors that systems can produce, vary between additive and subtractive color models. While theoretically ideal, the actual gamut in practice is often rounded due to interactions between raster-printed colors and paper absorption spectra. Like traditional CRT displays, or by optically spreading and modulating laser light to scan lines at a time, digital projection technology modulates each line in a similar way. Lasers can be used as light sources for DLP projectors, with multiple lasers combined to increase the color gamut range. The trademarked Digital Light Processing (DLP) technology from Texas Instruments uses a rectangular array of microscopic mirrors on a chip. Each mirror measures less than one-fifth the width of a human hair and tilts towards or away from the light source to create pixels on the projection surface. In current DLP projectors, a rapidly rotating wheel with transparent colored "pie slices" presents each color frame successively, showing the complete image after one rotation. Photographic film can reproduce a larger color gamut than typical television, computer, or home video systems. CRTs have a roughly triangular color gamut that covers part of the visible color space. LCD screens filter light emitted by backlights, with limitations due to the backlight spectrum. Wide-gamut CCFL and LED backlights improve LCD color range, but some technologies vary colors based on viewing angle. TVs typically use CRT, LCD, LED, or plasma displays, but do not fully utilize their color display properties due to broadcasting limitations. TVs follow the ITU standard Rec. 601 for common color profiles, while HDTV uses a slightly improved profile based on Rec. 709. Computer displays using the same technology as TVs, however, use full RGB with all bits from 0 to 255, whereas TVs only use values from 16-235. Paint mixing achieves a larger color gamut by starting with a broader palette than CRTs or printing processes. While paint can reproduce some highly saturated colors that CRTs struggle with, its overall color range is smaller. Printing typically uses the CMYK color space, with very few processes excluding black ink. Given text here Laser Technology and Color Gamut Lasers can be classified into different wavelength ranges, including 810nm, 830nm, or 852nm, with power levels between 50-200mW. These lasers often feature a single-mode (54xx Series) configuration. Various sources provide information on lasers, alignment lasers, and lab/OEM lasers from companies like Laserglow Technologies. Researchers have explored the application of laser technology in color holography, producing realistic three-dimensional images. Another area of study is DLP Technology, which enhances image quality. The concept of a color gamut refers to the range of colors that can be produced by a device or system. This topic has been discussed in the context of Ultra HD Forum Guidelines v2.4 and BT.2020/2100 standards for television systems. Additionally, experts have investigated techniques for enhancing chromaticity gamut, such as heptatone multi-color printing and color gamut mapping.