

## ***backgrounder***

### **caddon – technology leader for digital color measurement**

**From the textile industry to furniture manufacturing, automotive design and packaging technology – rendering colors exactly has a major impact on product quality in numerous industries. To date, manufacturers have had to send physical samples, such as a piece of wood or a jacket, to their suppliers all around the globe. Thanks to the new technology from caddon printing & imaging GmbH, one can now exchange color-true samples digitally, saving time and money.**

Caddon, a specialized manufacturer and service provider for digital, large-format printing and color management, has been providing customized software and hardware solutions and manufacturer-independent advice about the latest color and printing technologies for over 20 years. The multispectral scanner manufactured by caddon color technology GmbH, a subsidiary of caddon printing & imaging GmbH, is currently revolutionizing the world of digital color measurement. The company has developed an imaging and measurement system that allows colored and structured patterns and surfaces to be measured with total accuracy. Caddon's system consists of four parts. The can:scan scanner measures the colors, the can:view viewing station optimally captures each color under different lighting conditions, the can:connect software connects all the hardware components and the can:change Photoshop plug-in enables the user to transmit calculated color values quickly and easily.

#### **Color-true digital samples in under a minute**

caddon's multispectral measuring device, can:scan, quite simply outperforms conventional scanning devices. For the first time ever, it calculates complex color patterns and structured surfaces, for example of fabrics, synthetic materials or wood, delivering color-true digital samples within 40 seconds.

The camera photographs each colored object through 16 filters, each of which only lets through the defined wavelengths reflected by the object's light. The software then uses these photographs to calculate the exact spectral values of the colored object, pixel for pixel. This allows can:scan to capture objects and samples with particularly detailed and complex patterns. Spectrophotometers cannot measure this level of detail as they only measure the average of a color surface's spectra within its measurement field.

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Pictures taken by modern digital cameras have good spatial resolution, but they are not color-true. Conventional color-measuring devices provide reliable samples from single-color, unstructured surfaces, but they do not take into account spatial or locally resolved effects. can:scan marries the advantages of both systems. The multispectral scanner can also photograph large, three-dimensional pieces, such as garments, capturing every detail of a fabric swatch or other surface, as well as color nuances caused by light and shadows.

### **Getting the color right**

Lighting conditions are crucial when judging colors. For example, the color tone of an item of clothing by daylight can differ greatly when displayed under a department store's neon light. The viewing station, can:view, takes this so-called "metamerical behavior" into account. It consists of two optimally synchronized components: a light box and a monitor. The light box simulates different light sources and recalculates each spectral value of the digital sample. This means light from the normal light source is incorporated when rendering the image on the screen. The process also enables an intuitive and ergonomic working style. The user simply places the colored object directly on the monitor and compares it with the sample rendered virtually. Conventional color measuring devices fail here as they do not account for the influence of the monitor's self-lighting effect or the impact of normal light on the original.

The monitor in the can:view system captures digital pictures perfectly. Pictures taken with a multispectral camera are particularly color-true - identical to the original - on the screen. Manufacturers can therefore compare the original directly on the monitor with the digital sample and judge it error-free under highly-diverse lighting situations.

### **Integration through software**

The can:connect software drives the can:scan and can:view components and enables the user to analyze the multispectral datasets, compare them, and produce measurement protocols. The software presents the spectral information for every pixel of the surface that was measured. The software uses this information to visually reproduce the measured object's metamerical behavior and reproduces it visually under the light conditions defined on the computer.

caddon has also developed the can:change Photoshop plug-in which allows photographs to be corrected objectively and precisely. This is achieved by

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measuring all the chromaticity coordinates from the digital sample and transferring them to the photograph of the original.

***About caddon printing & imaging GmbH:***

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