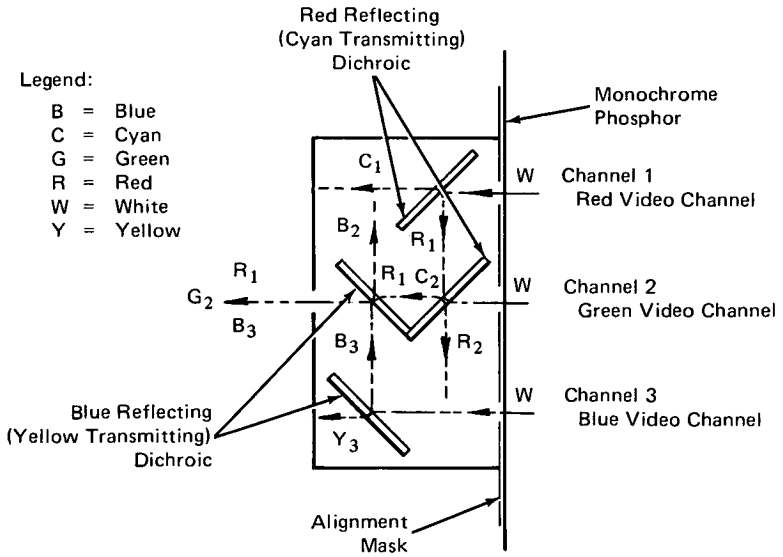
NASA TECH BRIEF

Langley Research Center

Optical Device for Producing Color Line Scan Display From Monochrome Oscilloscope Traces



OPTICAL PATH THROUGH DEVICE

The problem:

To display a color line scan using a monochrome cathode ray tube (CRT) so that a continuous motion recording camera may record these color lines onto color film, using equipment which is readily available. In addition, the time required for color reconstruction must be reduced over that of the line sequential technique where a filter wheel is rotated in front of the CRT. The signals to the monochrome CRT originate from three color sensors which are scanning the same point in object space. The three separate video signals, red, green and blue, are then used to intensity modulate the beam of the CRT.

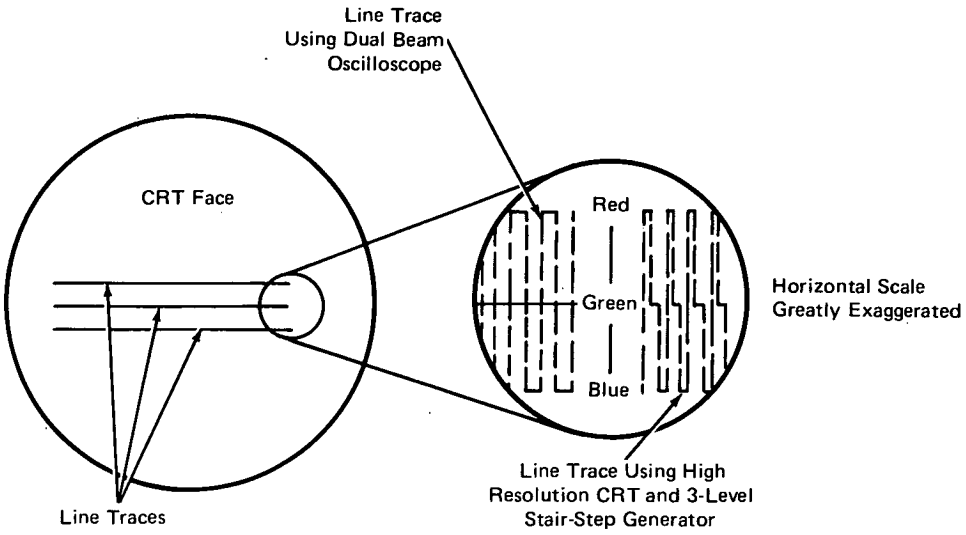
The solution:

A novel device allows the generation of simultaneous color line scan from the face of a monochrome cathode ray tube. The device consists of four dichroic beam splitters, two each of red reflectance (cyan transmittance) and blue reflectance (yellow transmittance) which are arranged in parallel as shown in Figure 1.

How it's done:

The generation of simultaneous color scan can be accomplished by use of either a dual beam oscilloscope where one beam is chopped and displayed above and below the center line, or a single beam high-resolution oscilloscope and a three-level stair-step generator shown in Figure 2. In either case, the three color video signals to the CRT (red, green, and blue) would have to be synchronized with the kind of chopping employed. A continuous motion recording camera synchronized to the CRT sweep is required to receive the line images in a continuous mode.

(continued overleaf)



CATHODE RAY TUBE VIDEO DISPLAY

Previous techniques either required the use of a color filter wheel to obtain color sequential scans or color generation using standard tri-dot color phosphor CRT. In the above cases, a factor of three in reduced time and much higher resolution are realized, respectively, by the use of this new optical device.

Note:

Requests for further information may be directed to:

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Patent status:

Inquiries about obtaining rights of commercial use of this invention may be made to:

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(LAR-10896)