Visual Displays
Magnification Functional Testing

GOAL

Visitors will discover how tuning the color of subpixels within a visual display can create an apparently continuous image.

MATERIALS

- Smartphone
- Printed image of pixel magnification
- 17.5X power magnifier
- 20-40x pocket microscope
- Subpixel color mixing device

PROCEDURE

Set-up

1. Turn on phone and display a photo preferably with both colors and significant amount of white.
2. Make sure microscope is set to highest magnification.
3. Turn on color mixing device.

Demonstration

1. Ask visitors what they know about how the color display on a smartphone works.

2. Show visitors the picture on the phone. Explain that even though the picture looks continuous to our eyes, it is actually made up of tiny individual dots called pixels. Show visitors the printed image of pixel magnification.

3. Place the 17.5X magnifier over the screen to show visitors the individual pixels.

4. Explain that each pixel is made up of three subpixels – red, green, and blue. The computer inside the phone precisely controls the color of these subpixels so that together, they make the pixel appear to be the color that our eyes perceive. If we look even closer, we can actually see these subpixels.

5. Help visitors hold the 20-40x microscope to the display (preferably over an area of white) and look into the eyepiece. Ask visitors if they can see the red, blue, and green subpixels.