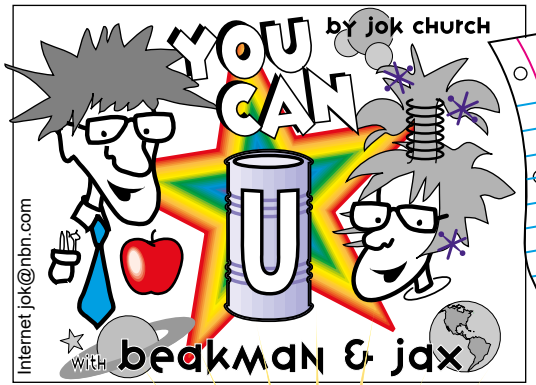
7-6-97 You Can Black & White
Universal Press Syndicate
EMBARGOED Until Release Date



Dear Beakman,

Why can you see a remote control flash when you look through a camcorder?

Billy Plato
Broomfield, Colorado

Beakman or Jax
P.O. Box 30177
Kansas City, MO 64112

Dear Billy,
It seems as though you already know that a remote control works by flashing bursts of code using infrared energy (IR).

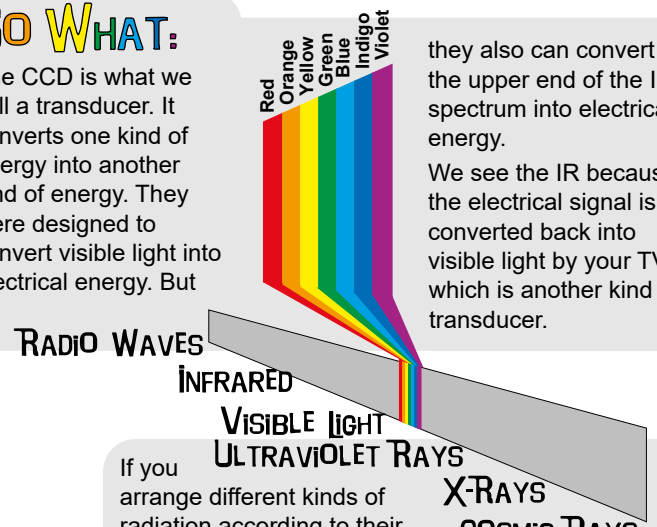
Our eyes cannot see IR. But lots of things can. TV sets can detect IR. That's how they receive the code from the remote. Some animals can see parts of the IR spectrum. And a lot of camcorders can see some of it too.

Beakman
Beakman Place

So What:

The CCD is what we call a transducer. It converts one kind of energy into another kind of energy. They were designed to convert visible light into electrical energy. But they also can convert the upper end of the IR spectrum into electrical energy.

We see the IR because the electrical signal is converted back into visible light by your TV, which is another kind of transducer.

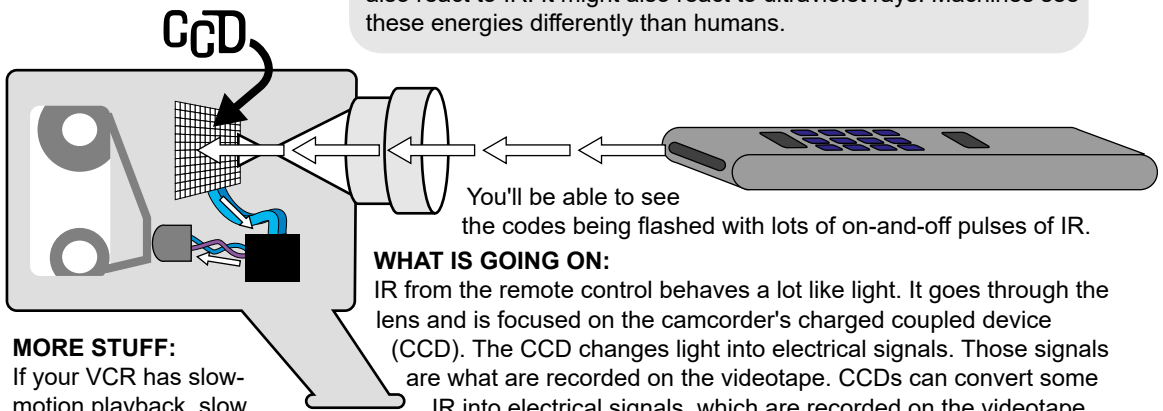


If you arrange different kinds of radiation according to their wavelengths, you end up with what we call the electromagnetic spectrum. IR and visible light are right beside each other. A device made to react to visible light might also react to IR. It might also react to ultraviolet rays. Machines see these energies differently than humans.

experiment #1

WHAT YOU NEED: Camcorder - remote control
(If you don't know someone who has a camcorder, You Can do this experiment at a camcorder display at a store that sells them. Ask permission first.)

WHAT TO DO:
Turn on the camera and aim it at a friend who is aiming a remote control at the camera. Videotape while your friend pushes buttons. Try taping while your friend pushes each of the buttons for 1 through 0. Play the tape back and look at it on TV.



You'll be able to see the codes being flashed with lots of on-and-off pulses of IR.

MORE STUFF:
If your VCR has slow-motion playback, slow the tape down.

WHAT IS GOING ON:
IR from the remote control behaves a lot like light. It goes through the lens and is focused on the camcorder's charged coupled device (CCD). The CCD changes light into electrical signals. Those signals are what are recorded on the videotape. CCDs can convert some IR into electrical signals, which are recorded on the videotape along with the other signals.

P.S. from Jax: Think of the other transducers in your home. They all convert one kind of energy into other kinds. The list is long and includes speakers, light bulbs and even the toaster!

Color separations by Koessler Graphics, West Seneca, NY