Reverse Engineering

Team Members

Bailey Burroughs, Nate Daetwyler

Team Name

CSM Talons

Location Of the Team

8730 Mitchell Road, La Plata MD, 20646

Summary Report

Introduction

The team chose the JVC Television model AV-32D303. This TV was developed in 2002 and was well received by people due to it having color and having a 32 inch display. It had a 700 line horizontal resolution which was good at the time. The reason that this device was chosen is due to it being trashed. Team member Bailey works for the Park Service, which one day someone dumped it in the parking lot of a park that is overseen by the Park Service. Instead of just trashing it, Bailey took it for this challenge so that the television can get one last use.



Reverse Engineering

Once you have taken off the back cover, the first thing you must do it discharge the device. You can do this simply by grounding it to get rid of the charge.

You can use a screwdriver with a wire attached to something grounded to get rid of the charge.



The main component that makes the JVC television work is called the Cathode Ray Tube (CRT)



This is a picture of the CRT of the JVC Television

The way a CRT works is broken into about three parts. You start with the Electron gun, which has a cathode that emits electrons, and the anode is used to focus the electrons to a beam (Figure 1).

After the electrons exit the electron gun, they are emitted towards the screen which is coated in phosphorus which reacts to the electrons by glowing white. The electro-magnets are charged which redirect the electron beam across the screen to form a Raster Scan Display, RSD (direction is shown with the green arrows). Different voltages applied to the electron gun give off different levels of brightness, which gives the different shades of black and white for the colorless CRT televisions (Figure 2).

If you want to have a colored television like the JVC AV-32D303, you will have the same system as in figure 2, but you will have three sets of the electron gun. The screen will also be coated in three sets of phosphorus that emit red, blue, and green, which when combined will give the different colors for the picture.







Figure 2



This is the Circuit Board of the JVC television which is used to control the voltage levels to the CRT from the inputs.

Conclusion

While doing this project the team learned many things about electronics. We now know that you must discharge electronics before operating on them since they can hold a charge, even when it has been off for great periods of time. Another thing that was learned was that with heavy objects like the JVC television, it is better to have help with dealing with it so that one does not over strain their self.