Texas Instruments Electronics Online Challenge - Team 95070A

The electronic device our team decided to disassemble was the Plantronics Vista M22 Universal Modular Telephone Amplifier. Essentially, it enhances and allows you to control the sound quality going to headphones. We chose this device to take apart because we wanted to see how audio devices worked from the inside out, and thought that this device would be simple, but still give us that opportunity.

Inside the telephone amplifier, I found several components of a circuit board, including a Plantronics microchip, a transformer, various capacitors, transistors, resistors, and vias. Additional electronic parts were visible externally, but still attached to the circuit board through soldering on the part of the manufacturer, Plantronics. These components included two on/off switches, a volume wheel, and several ports. I found no Texas Instruments components in this device.

Internal Components of the Device:

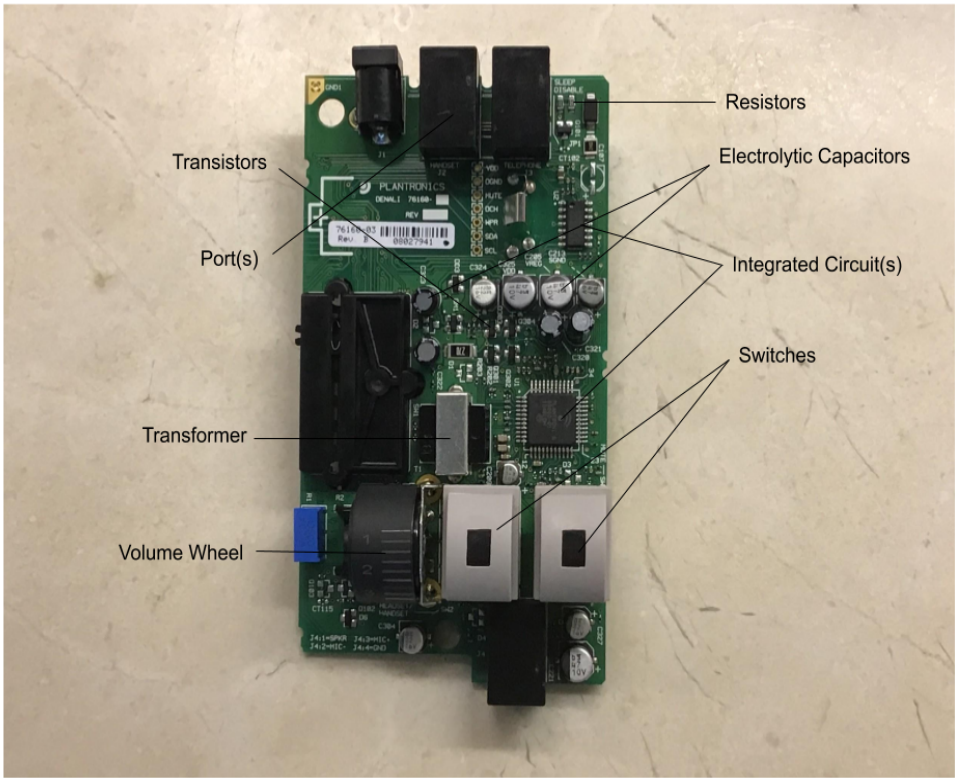
Integrated Circuit - A collection of electronic components (e.g. resistors, transistors) that are connected and compressed into a chip. Its purpose is to be the brain of the circuit, controlling logic and functions.
Electrolytic Capacitor - A basic storage device with the ability to store an electrical charge and release it when required.
Transformer - Transfers power from one circuit to another. Its location on the circuit board provides a prime place to transfer this power from the two switches to the rest of the circuit.
Battery - A device that stores chemical energy, converting it to electrical energy. This provides the source of energy that gets the current flowing in the circuit.
Resistors - A passive electrical component whose purpose is to limit the flow of electric current. This can be used to reduce voltage to a level that specific components of the circuit require.
Vias - Holes used to electrically join layers of the circuit board.
Bipolar Transistors - Current regulating devices that control the amount of electric current flowing through them

Externally Visible Components of the Device

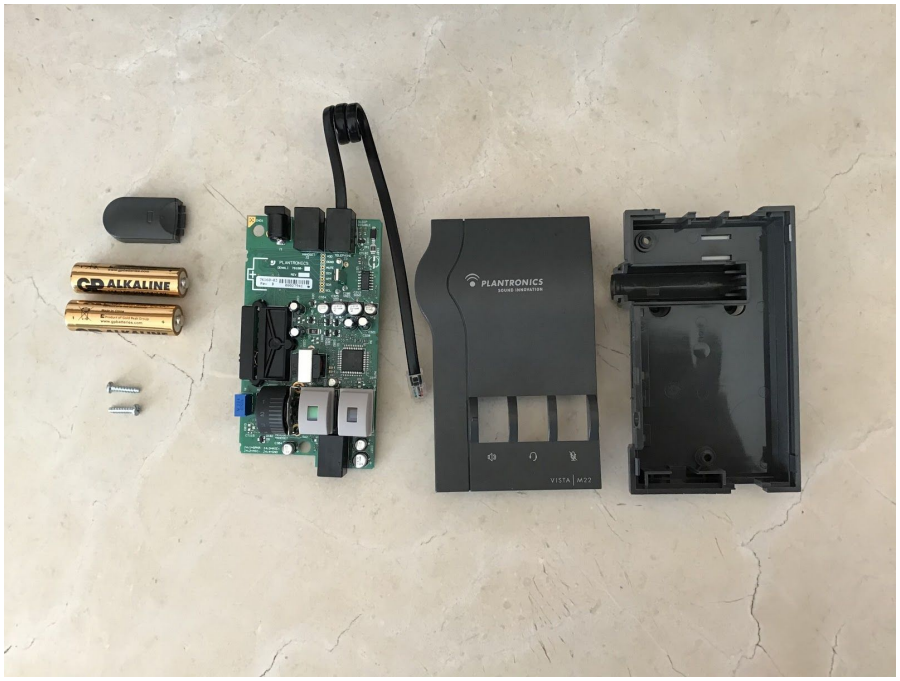
Ports - Sockets that are used to connect external devices to the telephone amplifier. In this case, one of the ports takes the input of the telephone voice channel, and an opposite port gives the output to the headset.

Volume wheel - As it suggests, the volume wheel is used to change the volume of the device. It, along with the ports and switches, are attached to the circuit board.
Switches - Basic on/off switches that switch between two given settings. One of them works as a mute button, and the other selects between two different headset options.

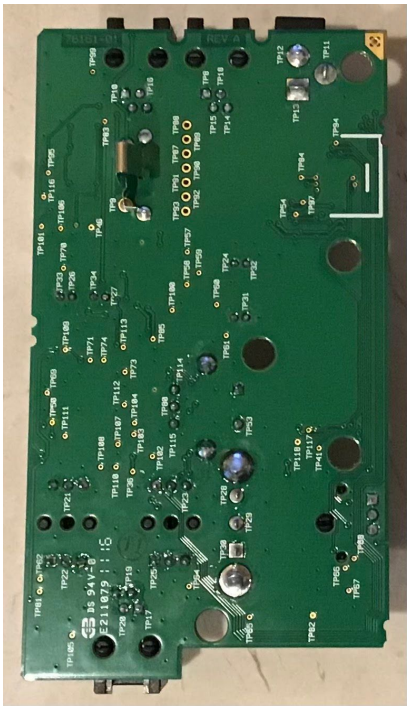
While working on this project, I learned a lot about how different components of circuit boards function. I found it really interesting to research and disassemble the various components of the device, and see how the different parts contribute to the whole device working. I hope to experiment more with electronics in the future, and apply the knowledge of the components of circuitry that I gained through this project.



A diagram of the telephone amplifier's circuit board.



The device disassembled.



The back of the circuit board. Vias (the tiny holes) and soldered anchor points for the components on the front of the circuit board are visible.

An external view of the device.