We took apart a router (model number: MI424WR). A router is an electronic device which directs the “traffic” between your devices and the internet. It helps you connect devices to each other, as well as the internet. We decided to take apart a router because we knew that routers play a big role in society, and we wanted to see what is inside of it and how it works. Additionally, it was the most convenient electronic we had at the time. In the router, we found multiple capacitors. We found a Diplexer, Solder Points, LEDs, Magnetic Modules, Chips, CPU, Inductor, Switch, Antenna, and a SDRAM.

Capacitors are devices that are used to store an electric charge. Solder Points enable one circuit from communicating with another circuit. It’s a pathway for signals and voltages.

A Diplexer consists of two filters at different frequencies connected to a single antenna. The filters include a Low Pass, High Pass, or Band Pass. A Diplexer is a 3-port passage device that promotes the ability for different devices to share a common communication channel. You could think of this like a switch. It allows current from a component of the router to travel to another component of the router.

The SDRAMs (Synchronous Dynamic Random-Access Memory) allow you to record and later retrieve experiences and information related to many things. They would refine the throughput and add more room to prevent network obstruction.

We found a Magnetic Module which is designed to support all chipsets. There was only one switch (excluding the Diplexer) which would allow power to pass throughout the router or turn it on/off.

There are chips in the router which have multiple transistors inside of them. Chips (also known as Integrated Chips) can be stored with different quantities of information which can be programed.

On the motherboard, there were LEDs (Light Emitting Diodes) which would indicate which mode/setting it was on.

The CPU (Central Processing Unit) is the brain of the device which contains all the circuitry needed to process input, store data, and generate the output results. The CPU is constantly following instructions of the programs that tell it which data to process and how to process it. In the router, the CPU is in charge of multiple things. It’s in charge of the internet routing and DNS (Domain Name System) communications as well as keeping track of all the data on the network.

The inductor is a coil of wire. It can store electrical energy in the form of magnetic energy. It allows the electrical current to come through it.

There was an Ethernet Transceiver which allows devices within a network to receive and transmit messages. An Ethernet Transceiver consists of a transmitter, and receiver.

An Antenna receives and transmits signals from device to device.

Surprisingly, after looking through the electrical components of the router, we found no TI electronic components. In this challenge we learned about many different electrical components and what they do. We also learned how the router functions.

FIG 1. Labeling of parts we researched with plastic casing on. (Excluding LEDs and Inductor.) Refer to FIG 2. for LEDs and the Inductor.

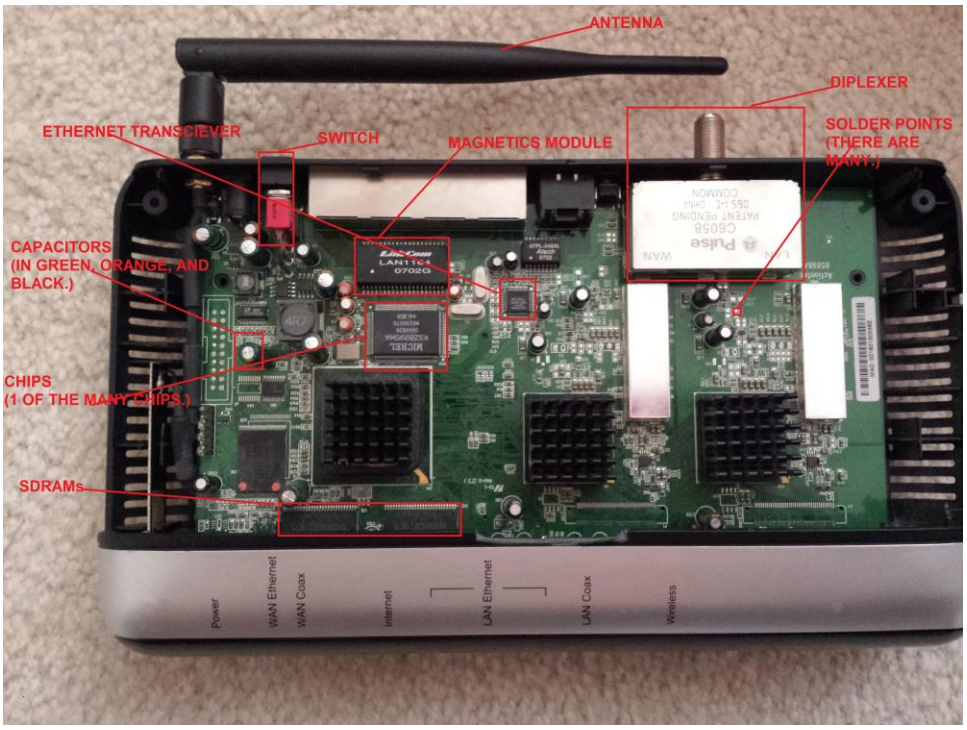


FIG 2. Labeling of Inductor and LEDs without plastic casing on. Refer back to FIG 1. for identification of other pieces we researched.

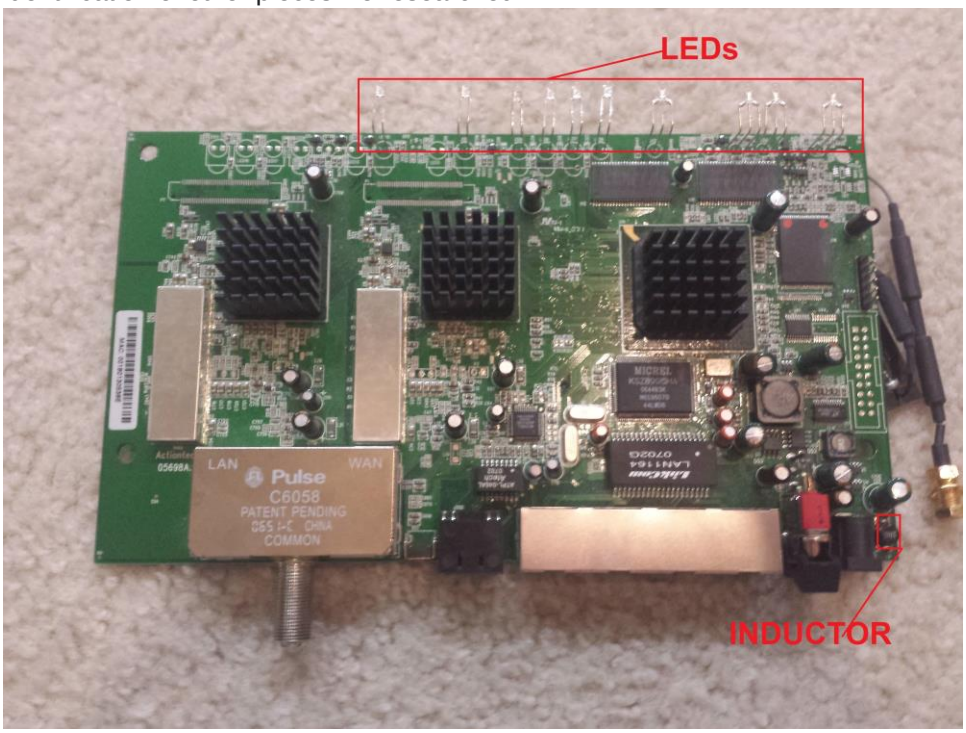


FIG 3. Back of circuit board/mother board with CPU.

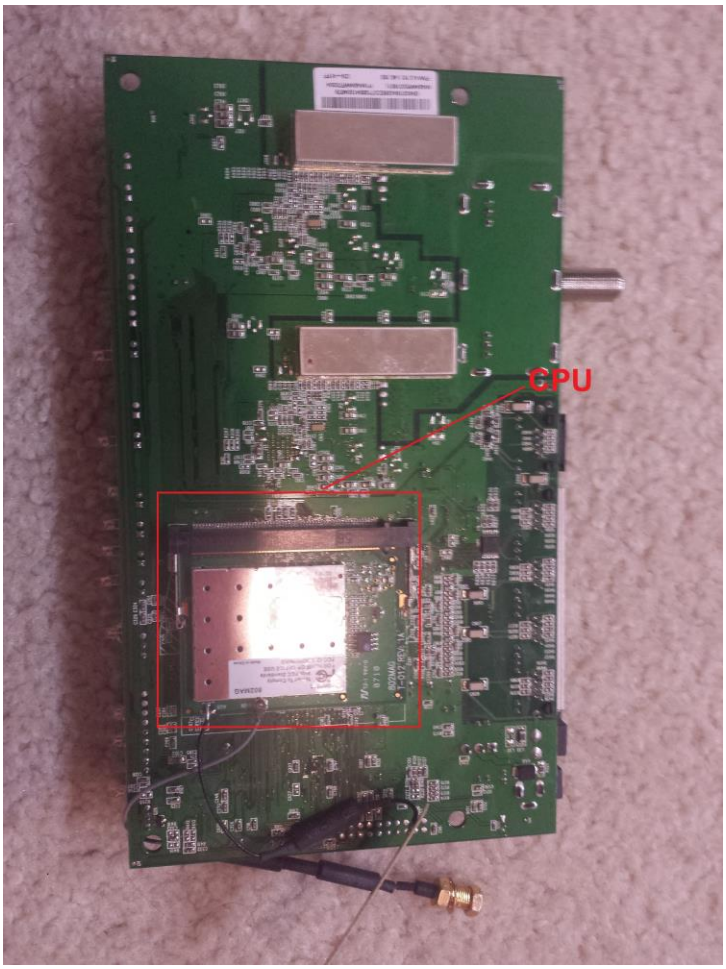


FIG 4. Front view.  Refer back to FIG 1. and FIG 2. for identification of other pieces we researched.