Electronics Online Challenge Sponsored by Texas Instruments

Deconstruction of an Apple AirPort Extreme

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Final report summary:

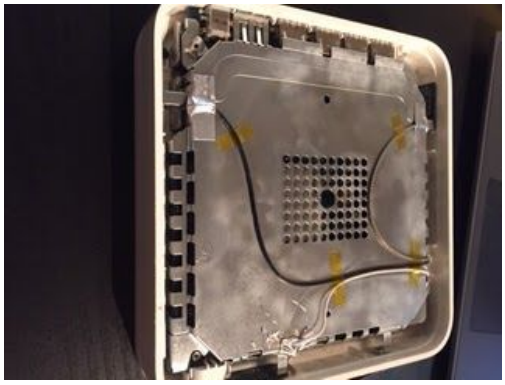
We have been given the opportunity to present our Texas Instruments Online Challenge to you, reader. The purpose of this activity is to find a device and carefully deconstruct it to find out what electronic components are inside. We will conduct research on what each component does and what it might do within the entire system of the electronic device. When we were going to deconstruct the device we chose, a 27P-S400 Tube TV, but we encountered an issue. The suction device, which let electricity into the tube, was said to hold a potentially lethal charge of electricity for months to years. We debated our options, and decided to look for a new thing to deconstruct. Dylan and his family eventually found an AirPort Extreme A1143; made from Apple and ready to be deconstructed. If we were not in these odd circumstances, I am two hundred percent sure that Mason would have helped deconstruct the device. Mason and Dylan then researched a ton of stuff and here is our report. During the project we researched where Apple gets its parts from Foxconn Group, which is Taiwan based. They also sell to companies including Dell and Sony. We believe that the power runs in through a cord. It charges the 3V battery. The shortage distributor makes sure that the system doesn't half run, it just is either on or off. The other cords send a signal down through the motherboard and update the system on what needs to be transmitted. The processors transform that into something the Atheros can 'read' and then the Atheros transmits the signal at 2.4 Ghz and 5 Ghz at the same time. Our conclusion is that through opening, research, and discovery, we have learned what is inside an AirPort Extreme and, for the most part, how it works, how the airport extreme sends signals to their IT system and how it stores power. Overall, we learned that a lot of parts make up everyday items and make intricate designs that define our lifestyle.

External Anatomy Pictures:

Outer Casing - Protects the inside and makes the device look good

Back - Soft to not get scratches

Inputs - Ports for cords including Ethernet and power.



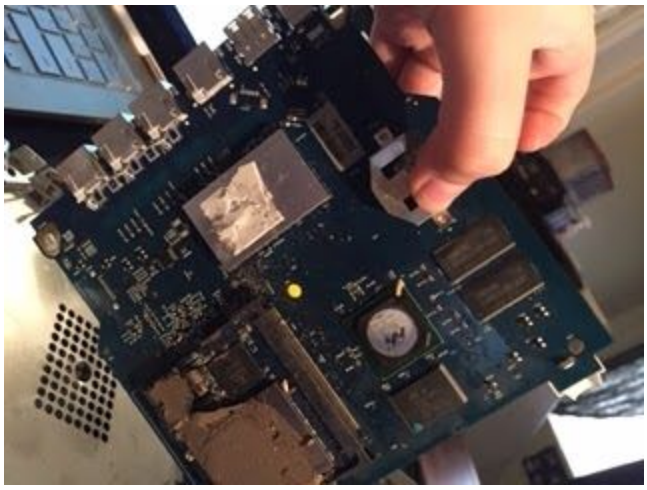
Metal Casing - Protects the motherboard and is extra protection
Internal Anatomy Pictures:

Microprocessor - Contains arithmetic, logic, and control circuitry. It interacts with the memory unit. The microprocessor, well, processes signals and works with the memory unit.

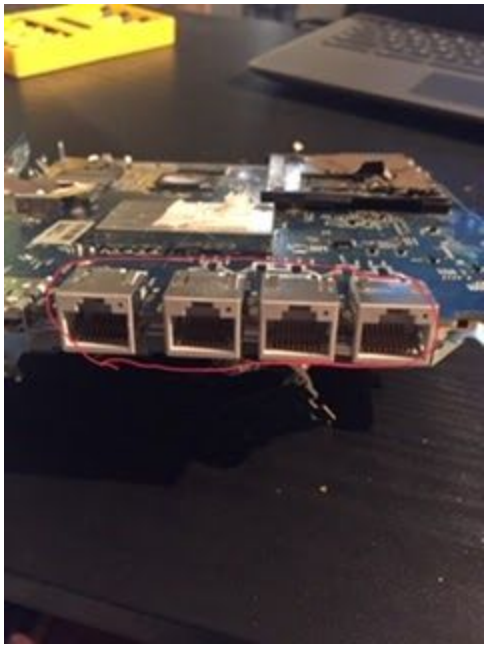
Resistor - Reduces the amount of electrical flow. This one is a 6.8 ohms resistor.

EE 0-0277R IC Chip

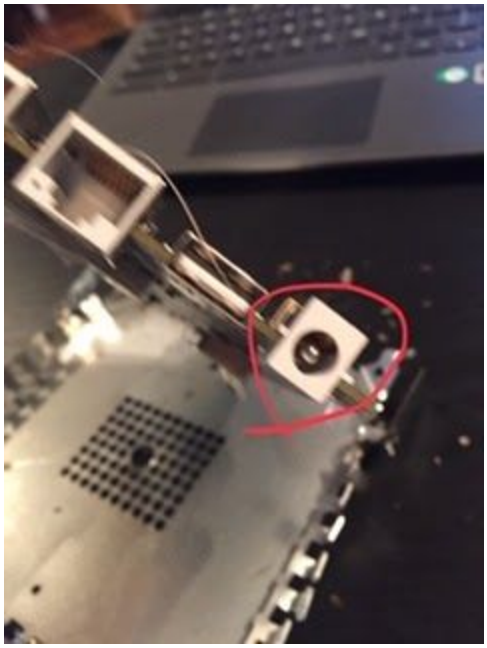
Atheros AR5416-AV1A - Transmits the Wifi signal of 2.4 Ghz and 5 Ghz



Motherboard/Logic Board - It is where everything attaches and sends signals to each other.



Ethernet Port - You can plug into this to get WiFi through a cord



Power Cable - Powers the system by charging the 3V battery.

Citations:

- Yumpu.com. (n.d.). Apple-airport-extreme-base-station-setup-guide-manual-airport-extreme-base-station-setup-guide-manual. Retrieved November 20, 2020, from https://www.yumpu.com/en/document/view/55991613/apple-airport-extreme-base-station-setup-guide-manual-airport-extreme-base-station-setup-guide-manual