

750E Reverse Engineering Challenge

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Team Location: South Brunswick, New Jersey



For this challenge 750E decided to take apart an old ipod touch 3 that one of our members had. It hadn't been used for over 5 years so there was no charge left. We chose this item because it is somewhat similar to the smartphones we use everyday. Also, the volume keys on the ipod had broken a while back so we decided to try and see what the issue was ourselves.

How we took it apart:

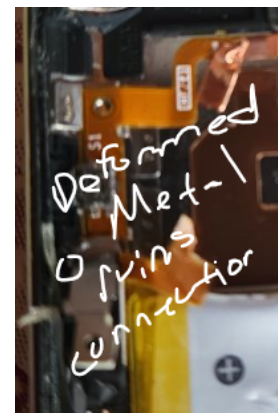
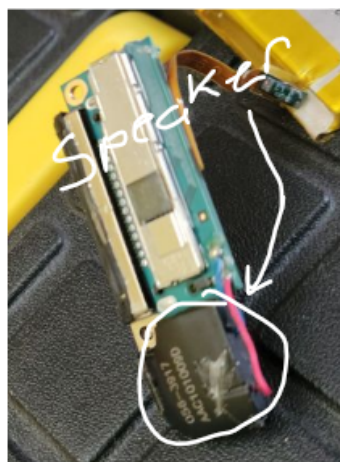
We began by taking a flat head screwdriver and prying into the edge of the ipods. We removed the LCD screen and found a metal panel with 7 annoying tiny screws. We also found the home button spot and the front facing camera. We did a little research on LCD screens and found that these Liquid Crystal Displays work by passing electrical current through them. They do not actually light up themselves and only work by "filtering" a light behind.



The next day, we finally removed the metal panel after spending countless hours trying to open the tiny screws. We knew there was likely no charge left in the entire device after not being used for 5 years, but we still were very cautious. But despite our best efforts, we did end up scratching the lithium-ion battery. We asked google if we were in danger and we were told that the battery might explode and set us on fire. However, with absolute responsibility, we attached tape onto it and got a fire extinguisher just in case. Since the battery wasn't punctured, we resumed our exploration. Besides the battery, we also found the charging port at this time.



Afterwards, we removed the logic board (the blue green circuit in the above picture). We found the speaker on the bottom right and removed it. We also found the volume buttons and found that a deformed piece of metal was stopping it from working accurately (*mystery solved*). Next, we removed the rear camera and found a snaking orange cable. We concluded that it was the power cable.



After we were done taking it apart we decided to look online for a breakdown of the ipod. In our search we found this: [iPod Touch 3rd Generation Teardown](#).

What we learned:

After reading the article and watching the video we learned a few things about phones that we did not previously know. One of those things that we learned was that the back-side of the LCD display is a mirror that reflects the back-light. Another thing we learned was that motherboards are actually a lot smaller than we thought. When we opened the phone we expected most of the inside to be the battery and the motherboard. In reality, the motherboard was just a small rectangle at the bottom of the case. Overall, we learned that cellphones are a lot more complicated than originally thought. We discovered lots of intricate wires, and perfect spacing to ensure everything fits within a case small enough to hold with 1 hand.

Parts list:

Battery

Front-facing Camera

Back camera

Case

Motherboard

Speaker

Wifi

Lcd

Flashlight

Charging port

Volume buttons

Home button

Wires