Amazon Fire TV Teardown

Teardown of the Amazon Fire TV, released April 2, 2014.

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INTRODUCTION

Rainy weather got you down? Stuck inside sitting on the couch eating popcorn? What better to do whilst eating popcorn than…*watch TV. While on Fire. Amazon Fire TV.*™

Yesterday, Amazon announced a tiny black box that supposedly does everything better than all of the other tiny black boxes. Join us as we investigate the insides of this April treat to see if it's got what it takes to burn through the competition.

Then tell all your friends what you found out! Follow us on Instagram, like us on Facebook, or read the results of our April Fools' joke on Twitter.

🔧 TOOLS:

- iFixit Opening Picks set of 6 (1)
- iFixit Opening Tools (1)
- Phillips #00 Screwdriver (1)
- iOpener (1)
- Y1 Tri-point Screwdriver (1)
- Tweezers (1)
- Metal Spudger (1)

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Step 1 — Amazon Fire TV Teardown

- Forget about using kindling—Amazon is pouring gas on the media box fire. Get ready to set your TV ablaze with these smokin' tech specs:

  - Quad-core, 1.7 GHz Qualcomm Krait 300 processor

  - Qualcomm Adreno 320 dedicated GPU

  - 2 GB LPDDR2 RAM at 533 MHz

  - 8 GB internal storage

  - MIMO Wi-Fi supporting 802.11a/b/g/n

  - Bluetooth 4.0

- More than just a TV box, the Fire TV has power to spare for games, and for a little extra dough you can get this snazzy gamepad controller.
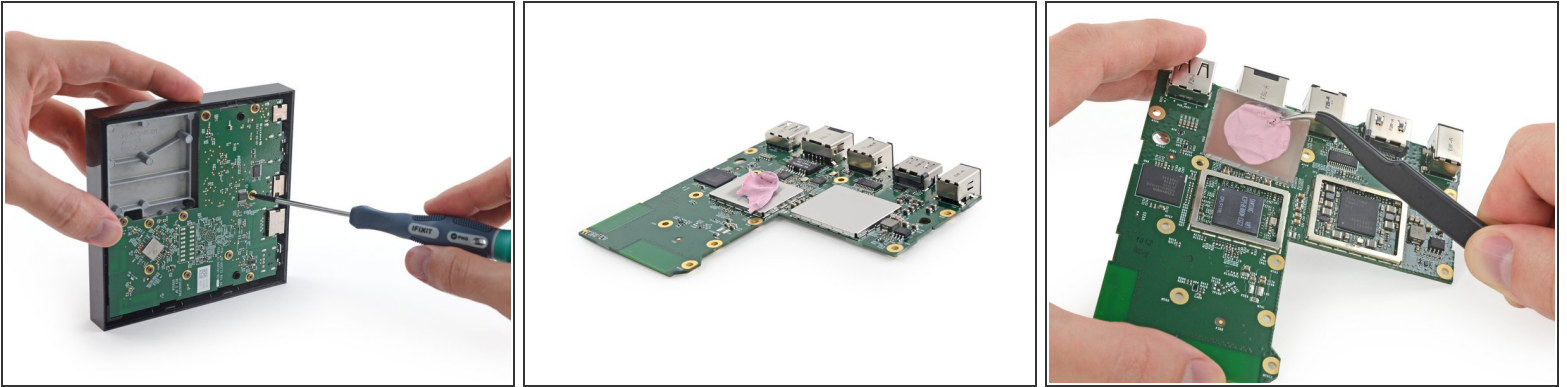
Step 2

- The otherwise featureless black box has a rainbow of ports on its rear:
  - 5.5 mm DC Jack
  - Type A HDMI 1.4b output, w/HDCP
  - Optical Audio (TOSLINK)
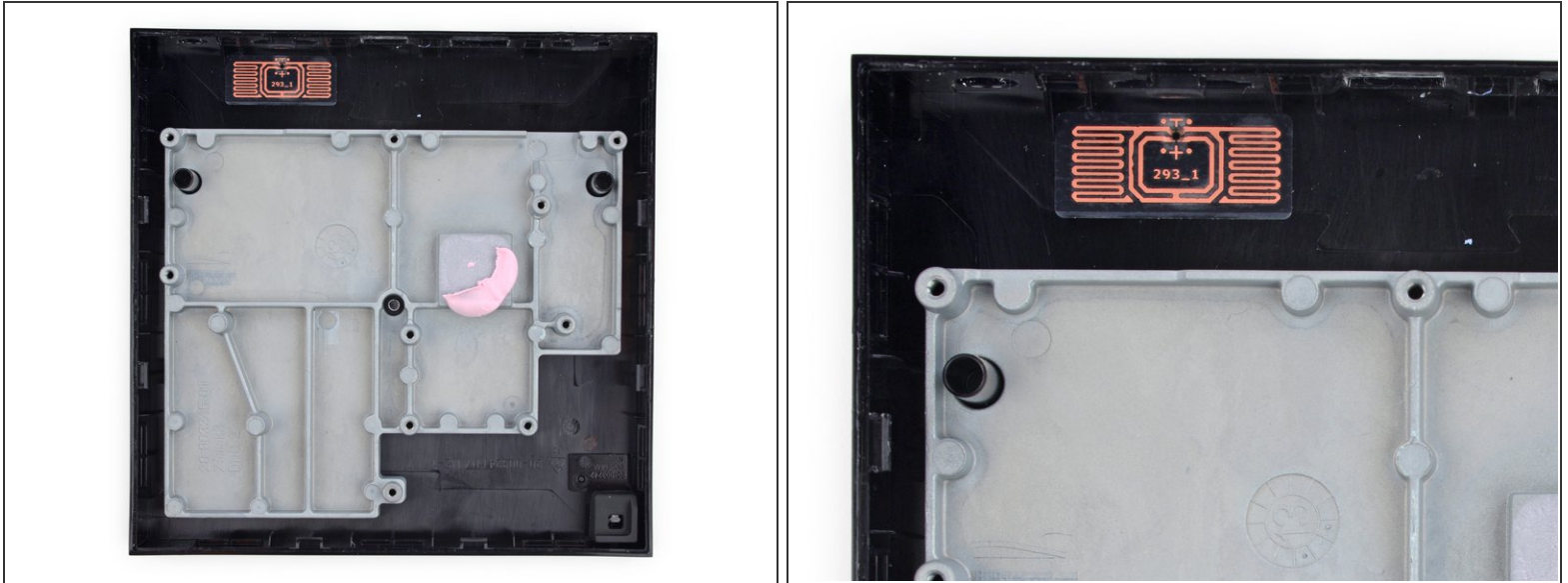 - 10/100 Ethernet
  - USB 2.0 Type A

Step 3

- We've had enough of the etchings; it's time to get inside.
  - *Go, go*, plastic opening tool!

- We dispatch the plastic clips to gain access to the Fire TV's internals. This hotshot may be tightly sealed, but it's no match for our icy blue opening tools.

- On the flip-side we've got some runes:
  - Model CL1130
  - 6.25 Volt DC Input
  - Federal Communications Commission Approval

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Step 4

- [Precision driving](#) is not only a skill—it's a sport. We drive through a series of screws on the motherboard with precision far surpassing that of [Imperial Stormtroopers](#).

- With just a few turns, this board-in-a-box is on the loose.

- Hey! Who left their bubblegum in our magic TV box? Gross.
  - ⓘ This thermal pad is a bright pink hint as to the whereabouts of the main processor.

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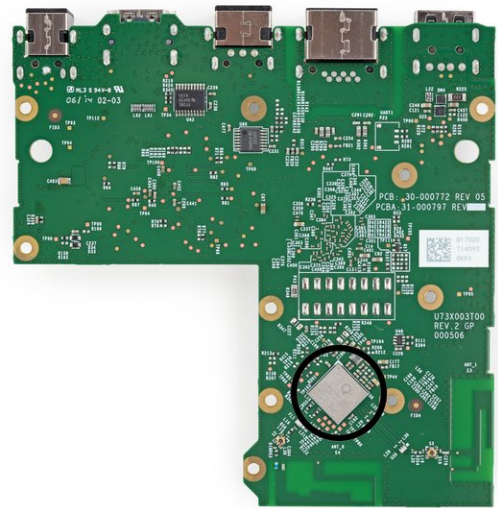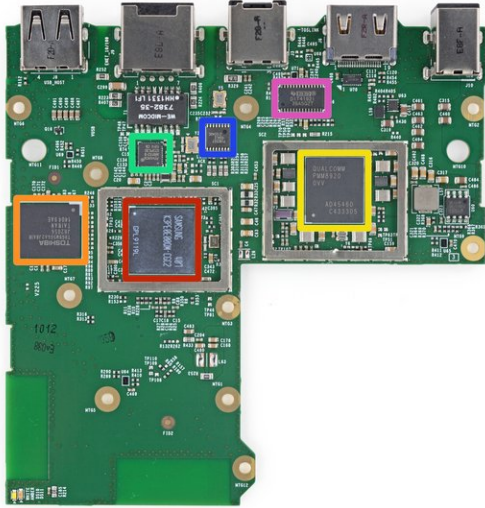
Step 5

- [Muppet news flash](#): Fire seems to put off a lot of heat. To keep this toasty box from [catching fire](#), Amazon included a heatsink that fills most of the top case.
  - In addition to aforementioned hefty thermal gum wads. Ah, the sweet taste of cooling.

- Keeping cool under the HDMI port, we find a little antenna, chilling all alone, not tied back into the system. With a tiny chip in the center, this looks like an RFID sticker, probably for [inventory or tracking during manufacturing](#).

Step 6

- Our first attempt at removing the heat sink involves an [iOpener](#) and an overwhelming lack of luck.
  - So begins the epic struggle...
- Fortunately, we're experienced with both fire and ice as we use the old [ice-cube-tray-twist](#) to dislodge this heatsink.
- The judicious combination of warmth and wiggling vanquishes this mighty foe.

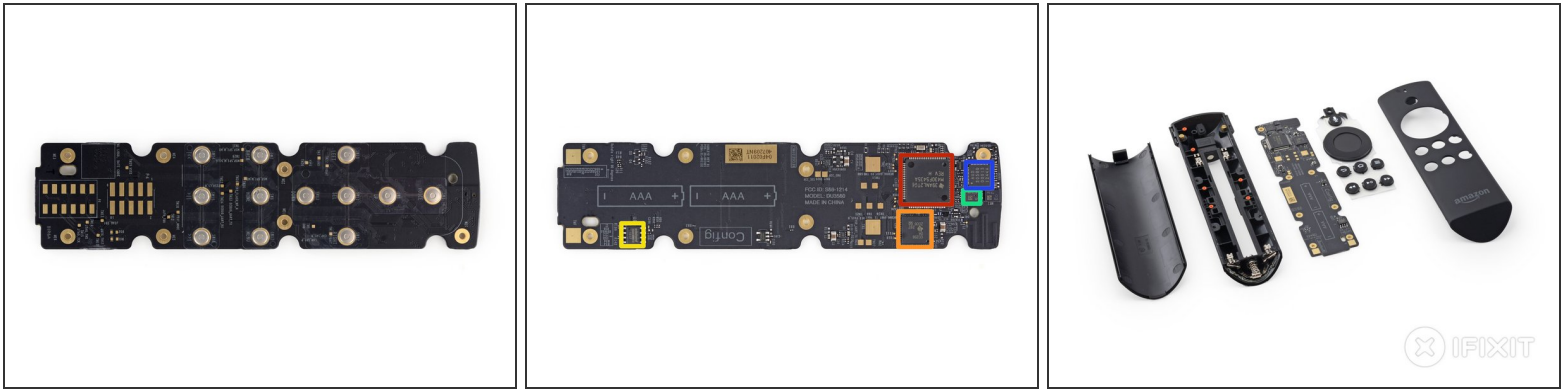This document was generated on 2019-09-18 11:26:31 AM (MST).

Step 7

- The Fire TV is packing a pile of pyrotechnic chips:

  - Samsung [K3PE0E00QM-CGC2](#) 2 GB LPDDR2 RAM—the same we found in the [Moto-X](#). The quad-core, 1.7 GHz Qualcomm Krait 300 processor is layered beneath the RAM.

  - Toshiba [THGBM5G6A2JBAIR](#) 8 GB eMMC NAND flash

  - Qualcomm PMM8920 power management IC

  - Atheros AR8152-B PCI-E fast ethernet controller

  - Pericom [PI6C557-03ALE](#) PCI-E clock

  - Texas Instruments [DIT4192](#) digital audio transmitter

  - And on the back, a Qualcomm Atheros [QCA6234XH](#) integrated dual-band 2x2 802.11n + Bluetooth 4.0 chip, the same seen on the [Kindle Fire 7" HDX](#).

Step 8

- With the Fire doused, we direct our efforts towards the remote.

- Replaceable batteries? *Check.* We dread the day when even remotes no longer house removable batteries.

- *Remote, disassemble!*

  - Apparently the voice search is not as advanced as we hoped. Alas, we will resort to using a screwdriver and opening tools to pry open the remote/microphone combo.

- Another component, another RFID tag. Looks like Amazon is rooting for a different kind of dystopian future than we'd all imagined.

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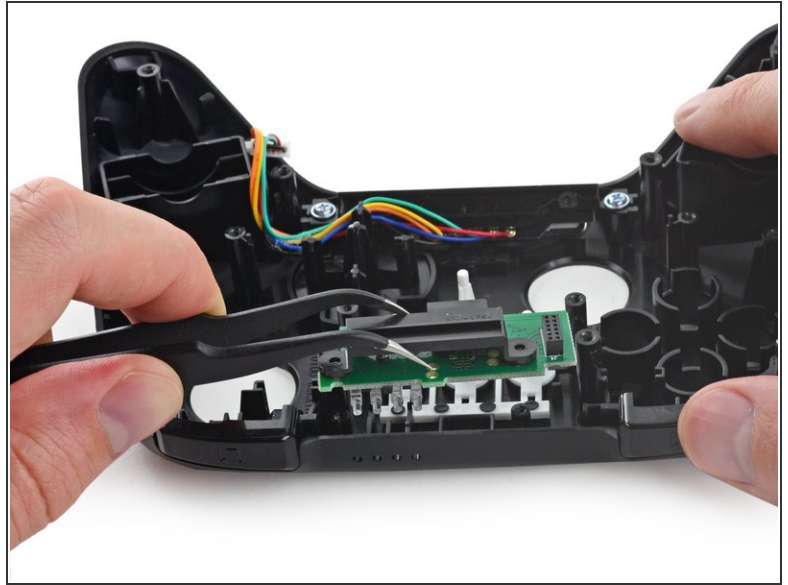© iFixit — CC BY-NC-SA

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Step 9

- Round two of board-in-a-box primarily features a bit of Texan muscle:
  - Texas Instruments MSP430F5435A 16-bit ultra low power microcontroller
  - Texas Instruments CC2560 dual-mode Bluetooth Classic and Low-Energy (BLE)
  - Winbond W25Q40BW serial flash memory with dual and quad SPI (Serial Peripheral Interface)
  - MD v1.2 microphone, the same one seen in the Kindle Fire HD
  - Audience es305 voice processor

- ⓘ We've noticed a trend of battle-tested chips at this party. Many of the chips in the Fire have proven their mettle in other devices.

- That's a wrap! Well, for this act anyway. Enjoy a remote layout by way of intermission.
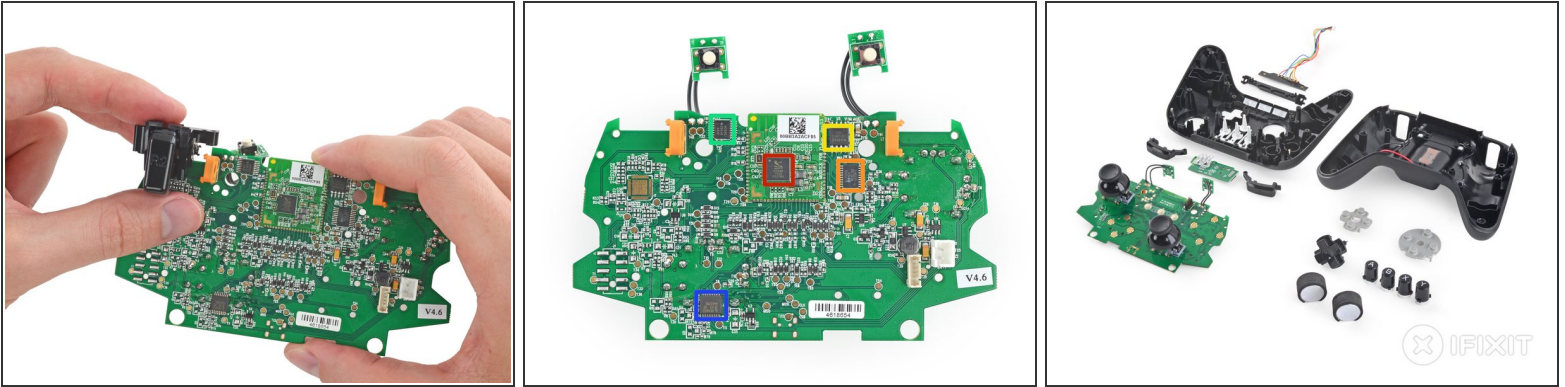
Step 10

- But wait...there's more! Round three of this teardown brings us to the gaming controller.

- The controller is tamper-proofed with a variant of the tri-wing screw family. They look cool and resemble shurikens, but we don't know anybody who keeps a shuriken driver on their tool belt.

  - (i) We do keep a tri-wing driver on ours. It's not a perfect fit, but the Pro Tech Screwdriver Set comes through in the clutch.

- Outwitting the strange screws, we pop this controller open. At least there's no adhesive keeping it shut.

- And to complete the trifecta, there lies the controller's RFID tag.

Step 11

- We tweeze out little trigger button boards like splinters.

- There's no time for a status report as we quickly free the status light and its ~~little green friend~~ board.

- ⓘ The insides of this controller look pretty standard, calling into question whether Amazon is trying to storm the gaming world, or merely adding features to boost content downloads—or perhaps both.

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Step 12

- Next we pull the trigger...off the controller's motherboard.

- We've touched the ~~Flying Spaghetti Monster~~ motherboard, and we're ready for some tasty treats:

    - CSR CSR8670 audio and Bluetooth system-on-chip

    - NXP LPC812 Cortex-M0+ 32-bit microcontroller

    - Winbond 25Q16DW serial flash memory with dual and quad SPI

    - Texas Instruments HC595 8-bit shift registers

    - NXP HC4052 dual 4-channel analog multiplexer/demultiplexer

- Boy howdy, it's your lucky day, reader! A second (gamier) layout, just for you.

Step 13

- Amazon Fire TV Repairability Score: **6 out of 10** (10 is easiest to repair)

  - Simple construction—upper case, lower case, heat sink, motherboard. Once it's apart, there's not much to keep track of.

  - The power supply is separate; should it ever need replacement, there'll be no disassembly required.

  - Standard Phillips screws populate the internals, making this box a worry-free affair once you're inside...

  - ...provided you never need to remove the heat sink, which is secured with copious amounts of *extremely* sticky glue.

  - The outer case is a *very* tight fit. Plastic clips are used rather than glue, but they're so stubborn you'd be forgiven for thinking otherwise.

  - A single board hosts all the vitals—clean and simple, but when it comes to repair, it's all or nothing.

To reassemble your device, follow these instructions in reverse order.