Apple TV 2nd Generation Teardown

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INTRODUCTION

After acquiring a small brown box during a daring heist this morning, we finally have the new Apple TV in our destructive mitts! Will this be the device that changes the direction of Apple as we know it? Tune in as we take apart the 2nd generation Apple TV.

We awarded the 2nd generation Apple TV a coveted Repairability Score of 8 / 10 due to its ease of disassembly, minuscule power consumption, and highly recyclable construction.

Follow us @iFixit on Twitter for the latest insight on what makes this thing tick.

TOOLS:

- Metal Spudger (1)
- Phillips #1 Screwdriver (1)
- iFixit Opening Tools (1)
- Tweezers (1)

Step 1 — Apple TV 2nd Generation Teardown

- After three years, Apple has finally released an updated revision of its revolutionary streaming home theater device, the 2nd generation Apple TV, powered by the Apple A4 processor.
- With such small dimensions, 0.9" x 3.9" x 3.9", and a mere weight of 0.6 lbs, no wonder it's been dubbed "The Puck."
- As a rare treat, Apple has decided to bundle an Apple Remote with the Apple TV.

Step 2

- The backside of the Apple TV:
  - HDMI output port
  - Optical audio out port
  - 10/100 Base Ethernet port
  - AC adapter port
  - Micro-USB (for service and support)

Apple is continuing its theme of hiding power supplies inside their devices. It's especially impressive here, considering that the Apple TV is only slightly larger than a 60 watt MacBook AC adapter.

Step 3

- The 2nd Generation Apple TV has a rated 0.3 amp current draw. That's only 20% of the amperage drawn by its square unibody cousin, the Mac Mini. Once we get inside, the internal power supply should tell us its real draw.
- Apple has branded the model number as A1378.

⚠ Check out all those scratches near the power socket! They were the result of wiping off dust with a microfiber cleaning cloth, so it's no surprise that the Apple TV is shipped with a strip of black tape stuck around its perimeter. Presumably, Apple used low density plastic for the case to aid in the transmission of infrared, Wi-Fi, and Bluetooth signals at the expense of scratch resistance.

Step 4

- Like many Apple devices, the Apple TV has no visible screws. So of course the first thing we did was shove a couple metal spudgers between the rubber-coated base and the upper case.
- The base pops right off after some careful prying.

Step 5

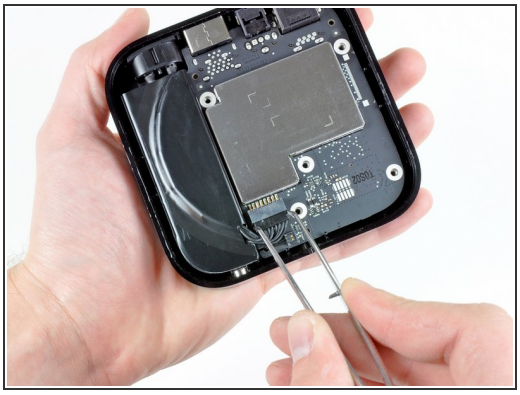
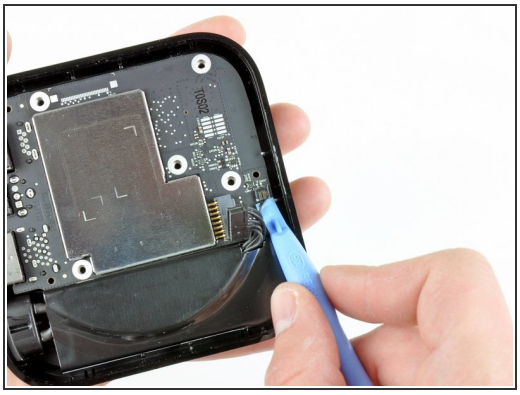
- And just like that, the 2nd Generation Apple TV is open.
- The large pink square near the center of the device is actually a thermal pad. We wonder why Apple chose to conduct heat to a plastic surface -- maybe a metal base was too expensive?
- We're pretty sure that this thing will not produce much heat.

Step 6



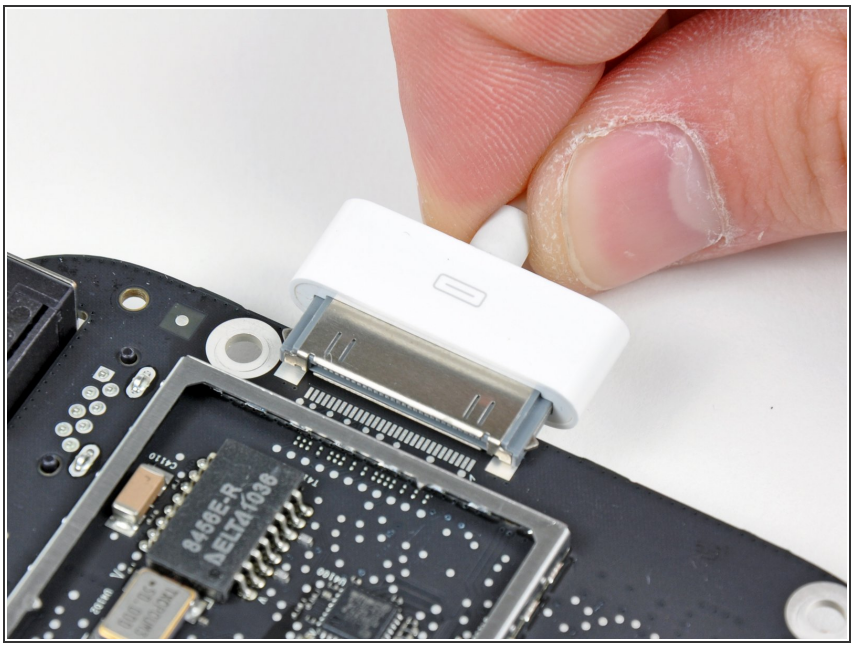
- We remove the first three visible #1 Phillips screws, only to find the metal heat sink being held in place by something else.
- A bit of sleuthing revealed another two #1 Phillips screws under the thermal pad. Sneaky Apple!
- The other side of the cover features another thermal pad. We feel this may be a trend...

Step 7

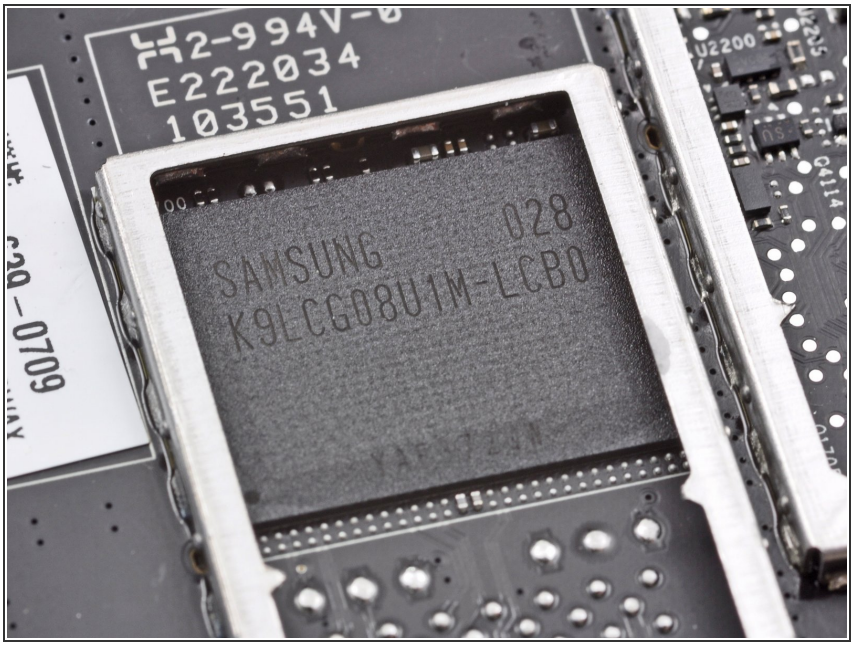

- After disconnecting the power supply and status LED cables, the logic board is ready to come out.
- Now, a couple pesky EMI shields are all that stand between us and the "goods."

Step 8



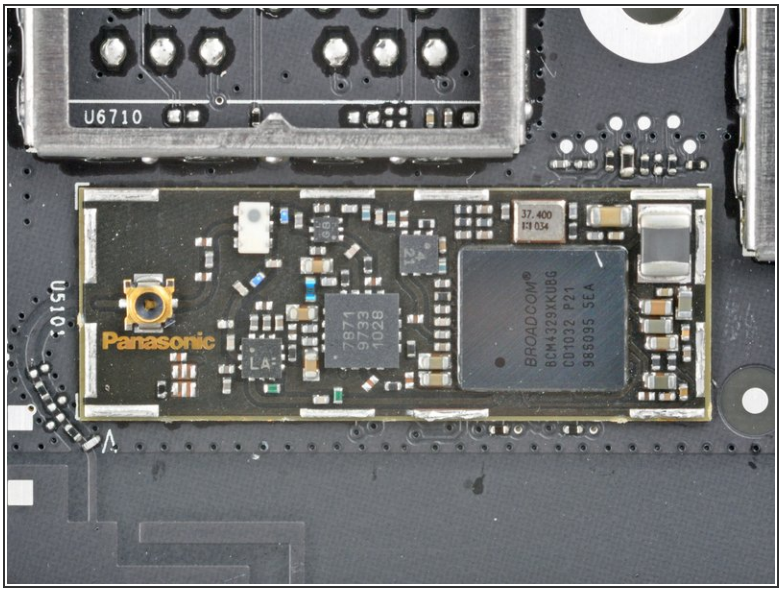
- Here's something interesting that one of the commenters pointed out: the solder pads near the side of the logic board look to be a *perfect* match for a dock connector!
- This Apple TV seems to be a couple of connectors shy of a full-on computer. Perhaps this logic board will be used in future iPads?
- Apple engineers likely used a dock connector to debug the Apple TV while it was in development.

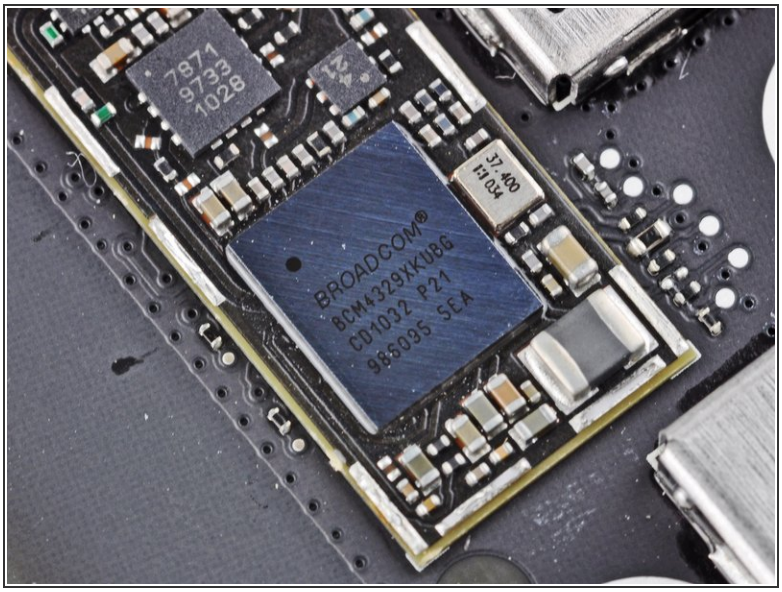
Step 9



- What is this? A Samsung K9LCG08U1M 8GB NAND Flash chip?
- Why, yes it is. It's the same part we found during the iPad teardown! This is a pretty remarkable amount of storage for a $99 device.
- We are pretty sure the Sammy is used to cache your favorite shows while they're being streamed.
- But we wonder, "What else you could do with 8 GB of exploitable storage?"

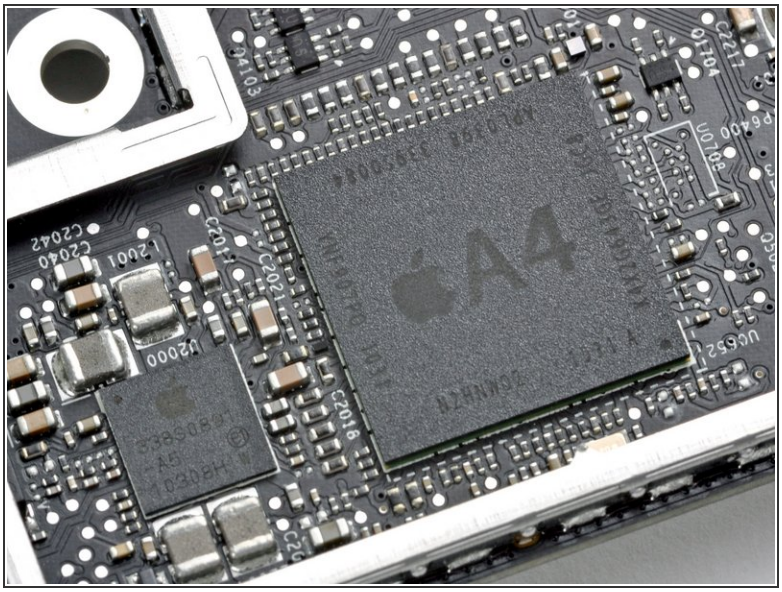
Step 10

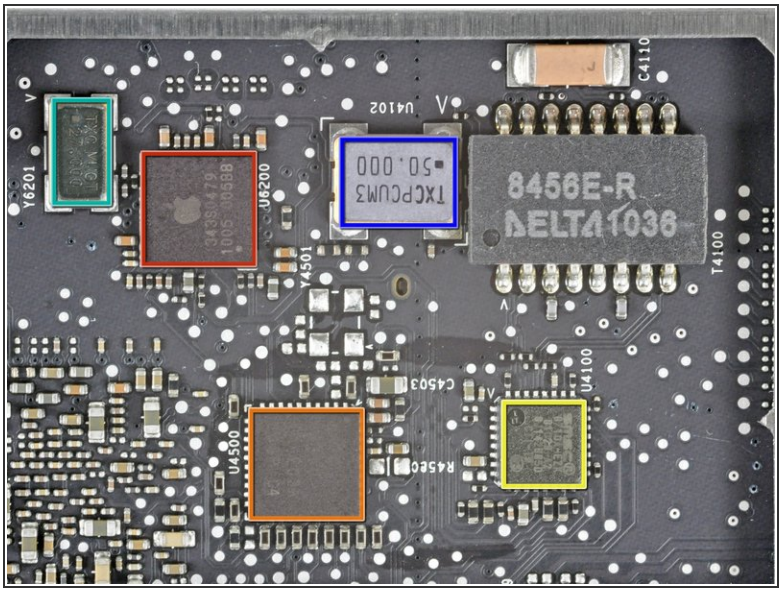




- Wi-Fi board brought to you courtesy of Panasonic! This may be the first time we've seen a Wi-Fi board from Panasonic in an Apple device. They usually provide optical drives for Apple's laptops.
- Apple may have gone with an off-the-shelf commodity daughterboard to reduce costs.
- The Broadcom BCM4329XKUBG 802.11n Wi-Fi/Bluetooth/FM chip on the Panasonic board is exactly the same as the one we found on the iPad.

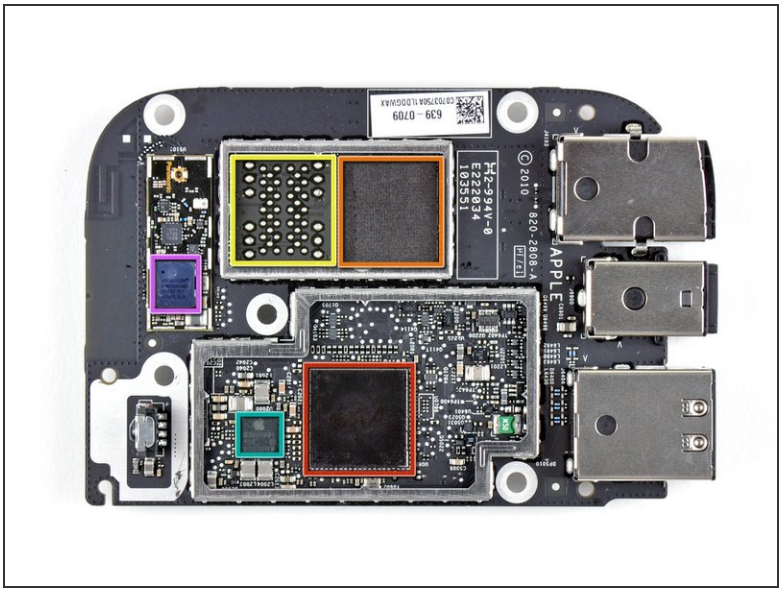
Step 11

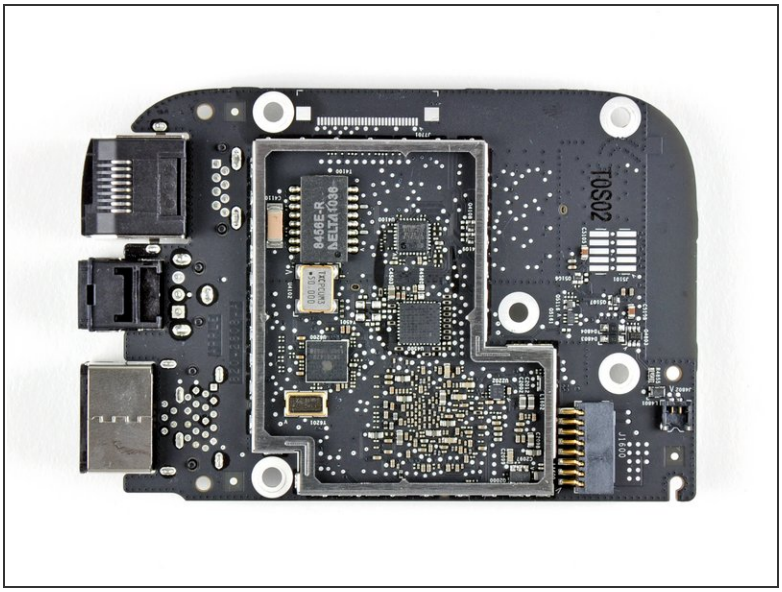




- The key marking of interest on the A4 processor package is **K4X2G643GE**. This is identical to the marking found on the iPad and 4th Generation iPod Touch, but different from the iPhone 4 processor.
- The Apple TV has 256 MB RAM, the same as the iPad and 4th Gen iPod Touch. We weren't expecting Apple to bump up the RAM, but it's a bit of a relief for app developers that the amount hasn't been reduced.
- The rest of the contenders:
  - Apple 343S0479 1005 005BB
  - M430 F2350 TI E03K C0GP G4 (16-bit microcontroller)
  - SMSC 8710A-EZK B1023-A2 (10/100 Ethernet Transceiver)
  - TXC MUGT 27.000
  - TXCPCUM3 50.000

Step 12





- The board. It's difficult to see some of the chip information because the silkscreen came off along with the thermal pads.
- Here's an idea of where all the chips reside in relation to one another:
- Apple A4 Processor
- Samsung NAND Flash
- Empty spot for another Samsung NAND Flash???
- Apple 338S0891
- Broadcom BCM4329XKUBG

Step 13

- There goes the power supply...
- The sticker on the power supply has this rating: 3.4V @ 1.75A
- We'll save you the multiplication: that's just 5.95 watts! Is this the most eco-friendly set-top box ever?

Step 14

- Next comes out the status LED. Its current status: disconnected.
- Apple brags that when in standby mode, the Apple TV uses less power than a night light. We don't suggest trying to use the status LED to illuminate your dark hallways, though.

Step 15

- Apple TV Repairability: **8 out of 10** (10 is easiest to repair)
  - Relatively easy to open case that can be easily reassembled.
  - Separate power supply board that can be replaced independently of the logic board.
  - Simple design - there's 6 pieces!
  - Relatively common fasteners (Phillips and T6 Torx) found throughout.
  - Thermal pads rather than thermal paste means no messy cleanup.
  - Lots of expensive electronics housed on one singular board means that if one fries, the board is toast unless you can attempt or know how to do component level repair.
- The ease of repairing this device, integrated high-efficiency power supply, low 6-watt power consumption, and efficient stand-by mode lead us to believe this may be the most eco-friendly set-top box of all time!

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