iPad 2 Wi-Fi EMC 2415 Teardown

iPad 2 Wi-Fi teardown.

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INTRODUCTION

We got our hands on Apple's newest tablet, the iPad 2 on March 11, 2011. Follow us on Twitter to get all the latest updates.

Check out MJ's video analysis of all the cool stuff we found in the iPad 2!

TOOLS:

- Heat Gun (1)
- Phillips #00 Screwdriver (1)
- iFixit Opening Tools (1)
- Spudger (1)

Step 1 — iPad 2 Wi-Fi EMC 2415 Teardown

- Finally!!! The iPad has come back to iFixit! And this time, it has a 2 at the end of its name, hence the iPad 2!
- After a much awaited debut, the iPad 2 is expected to fill in the gaps left by the first generation iPad.
- Tech Specs:
  - 1 GHz Apple A5 dual-core processor
  - 512 MB of LPDDR2 RAM
  - 16/32/64 GB internal storage capacity
  - 9.7" LED-backlit glossy Multi-Touch display with IPS technology (1024 x 768)
  - HD (720p) Rear-facing camera + VGA Front-facing camera

Step 2

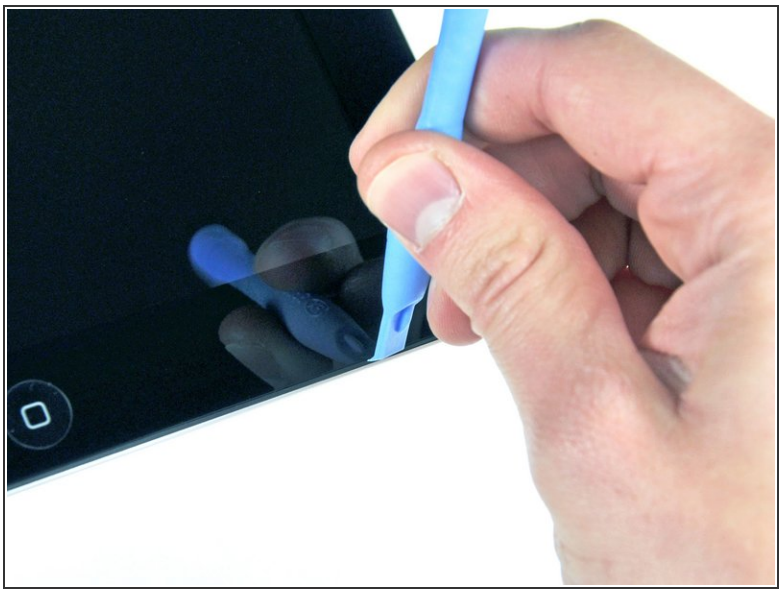
- A thickness comparison. You can definitely see the tapered edge of the iPad 2 when it's side-by-side to the old version.
- Our guess is there are no more clips holding the front panel in place -- now it's glued à la 4th Gen iPod Touch.
  - With the iPad's new tapered-edge form factor, big iPod Touch jokes are sure to run wild.
- Apple summarized the changes in 6 short phrases. "Thinner. Lighter. Faster. FaceTime. Smart Covers. 10-hour battery."

  The 10-hour battery life is the same as the original iPad, but it's impressive considering the device is also thinner, lighter and faster.

Step 3

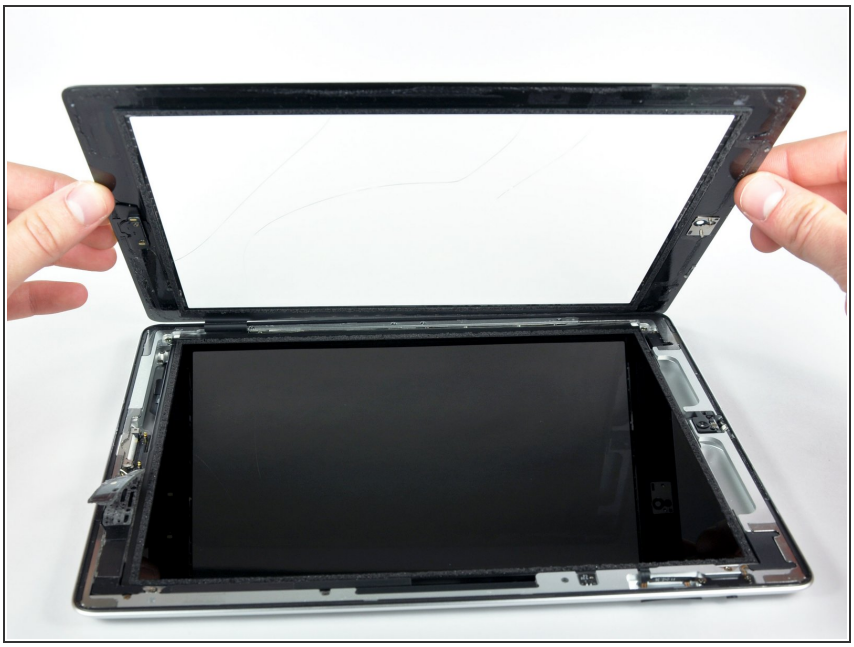
- A new model number graces the iPad 2: A1395. Thank you, Apple! That's much nicer of you than the twenty-six billion iterations of MacBook Pros you called model A1286.
  - Apparently, the iPad 2 is not as 1337 as the original iPad.
- The sole speaker grate can be found on the bottom-left of the back of the iPad 2. We're not fans of mono, but stereo will have to wait until iPad 3.

Step 4



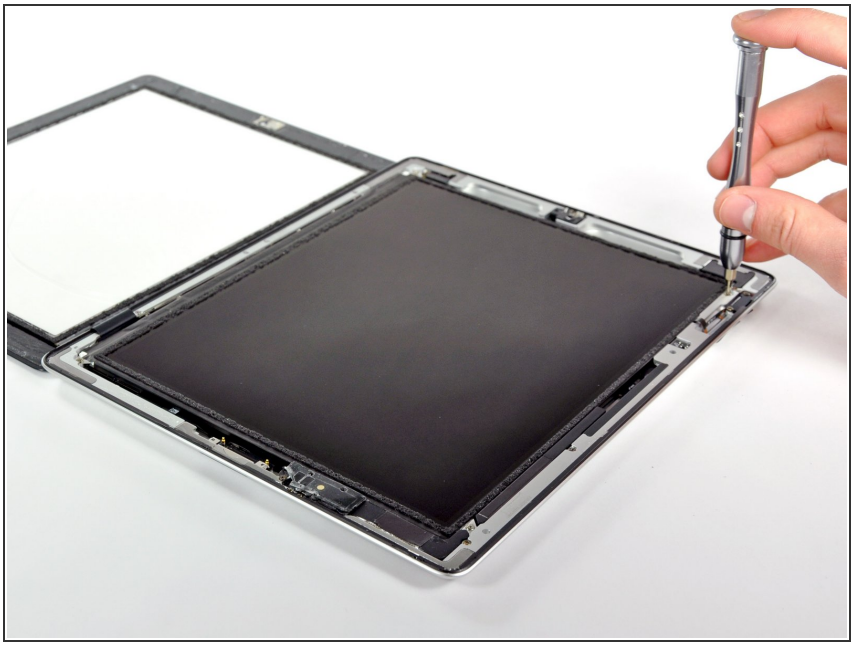
- Without further ado, let's begin tearing this iPad 2 apart!
- Unlike the original iPad, it looks like we need the help of a handy dandy heat gun to remove the front panel.
- With the adhesive loosened after a healthy dose of heat, we go to work on prying up the front panel with a plastic opening tool.

Step 5



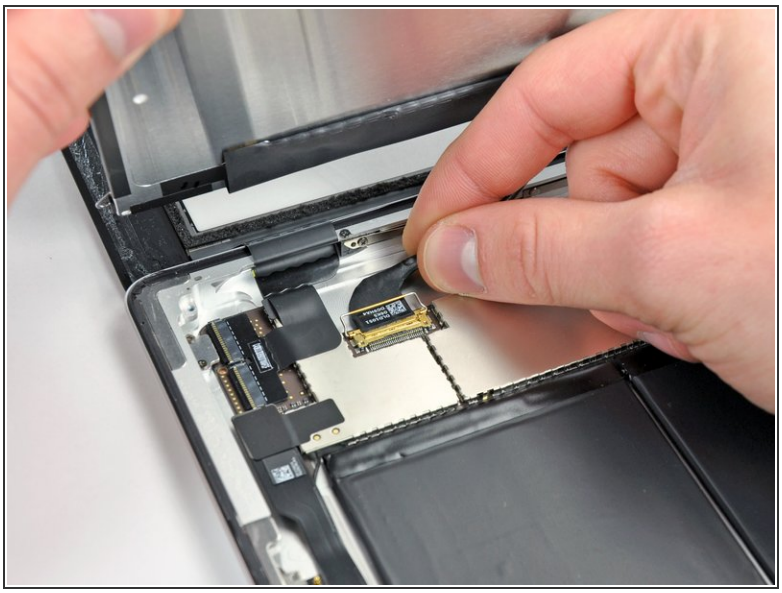
- And just like that, it's open. No clips, just tons of glue.
- As much as we hated trying to remove the clips in the original iPad, this much adhesive is even more of a pain. Be ready to crack your front panel if you dare open it! We'll be investigating the best way to get inside over the next few weeks.

Step 6



- A few screws here and there hold down the LCD screen. Not a problem for the iFixit's 54 piece bit driver kit.

Step 7

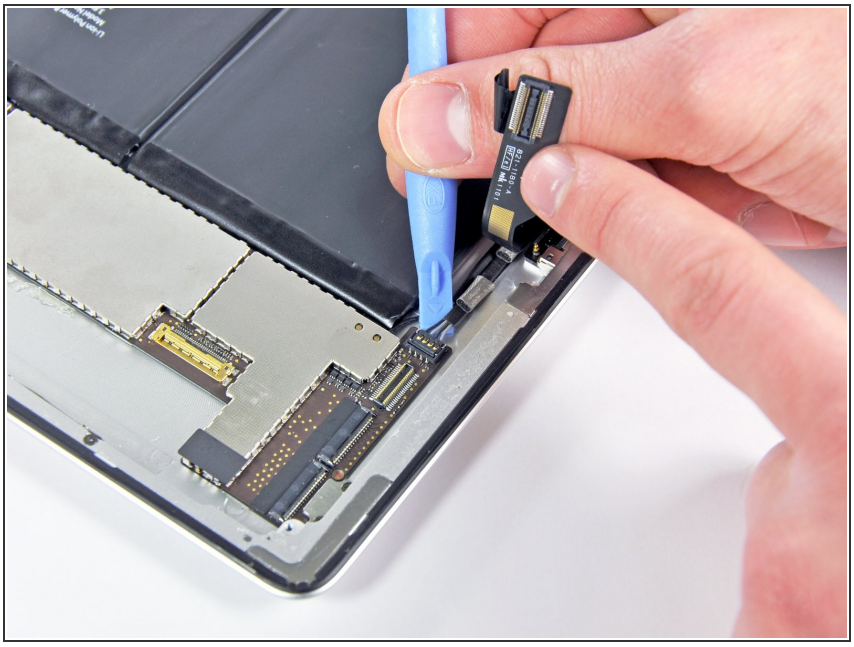


- Lifting off the LCD exposes the iPad 2's battery; A 3.8V, 25 Watt-hour unit. That's just a hair more than the original iPad's 24.8 Watt-hours, so any improved battery performance can be attributed to software and other hardware improvements.
- Also listed on the battery is a capacity of 6930 mAh, which may appear to contradict the already mentioned 25Wh at 3.8V ((25Wh/3.8V)*1000=6579 mAh), but 3.8V is the listed nominal voltage, not the average voltage. The average voltage of the battery over a full charge/discharge is closer to 3.6V leading to a more accurate calculation ((25Wh/3.6V)*1000=6944 mAh).
- After disconnecting its cable, the display can be removed from the iPad 2.

Step 8

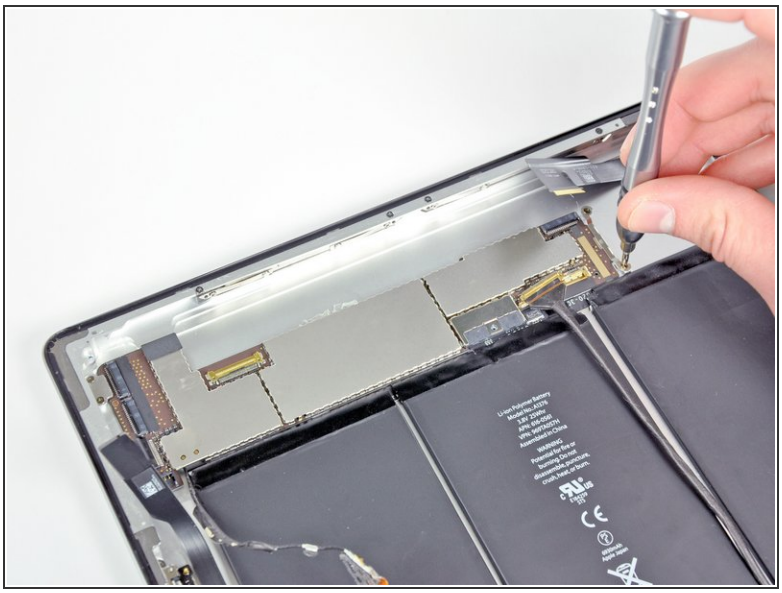
- Disconnecting the touchscreen ribbon cable from its socket on the logic board.
- An Apple device just wouldn't be complete without Multi-Touch. No surprise there.
- Removing the camera/volume control daughterboard connector from the logic board.

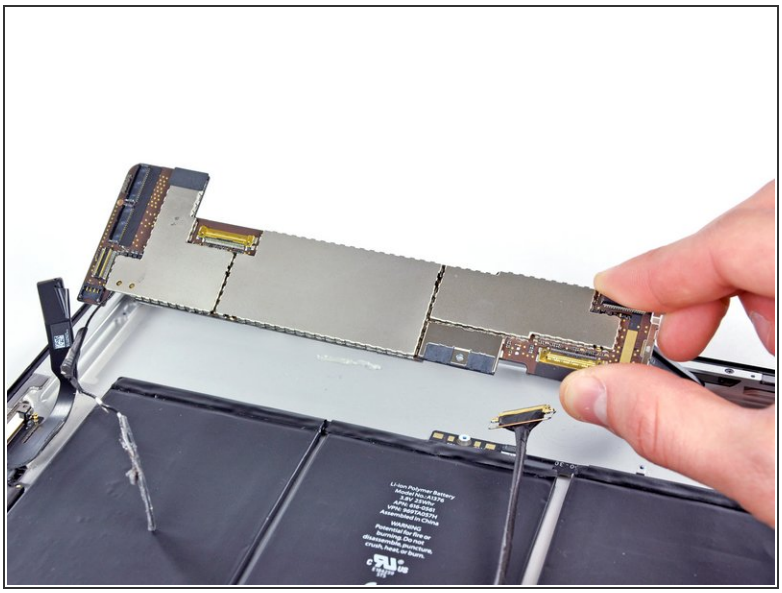
Step 9



- Next we disconnect the dock connector ribbon cable from the logic board.
- After disconnecting the dock connector, we disconnect the speaker connector.

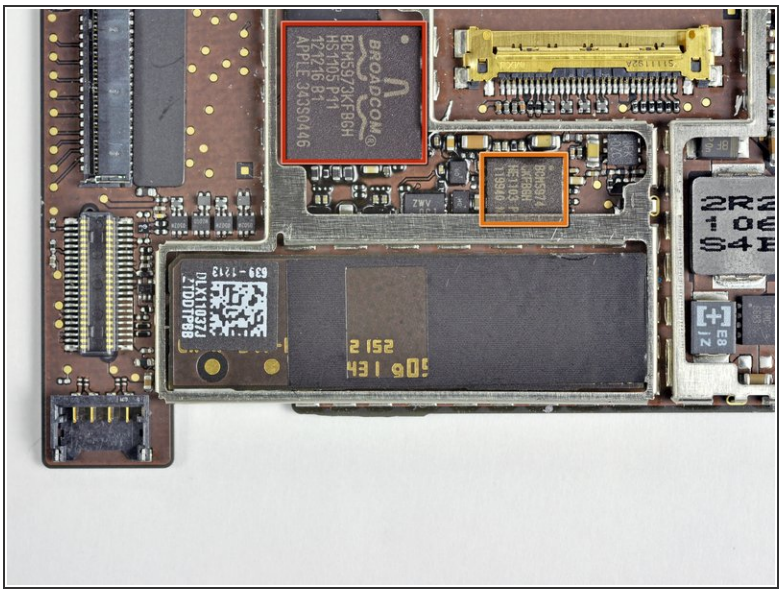
Step 10

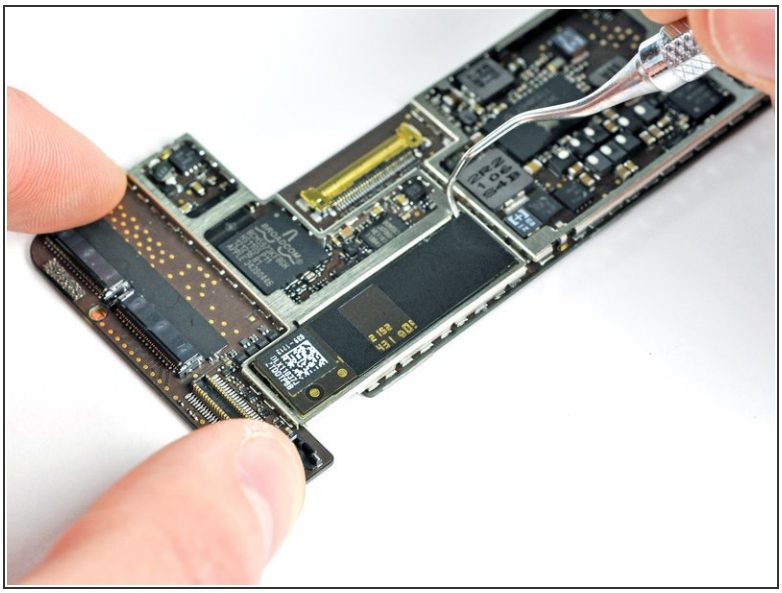




- The logic board comes out without a fuss after removing the Phillips screws securing it to the case.

Step 11

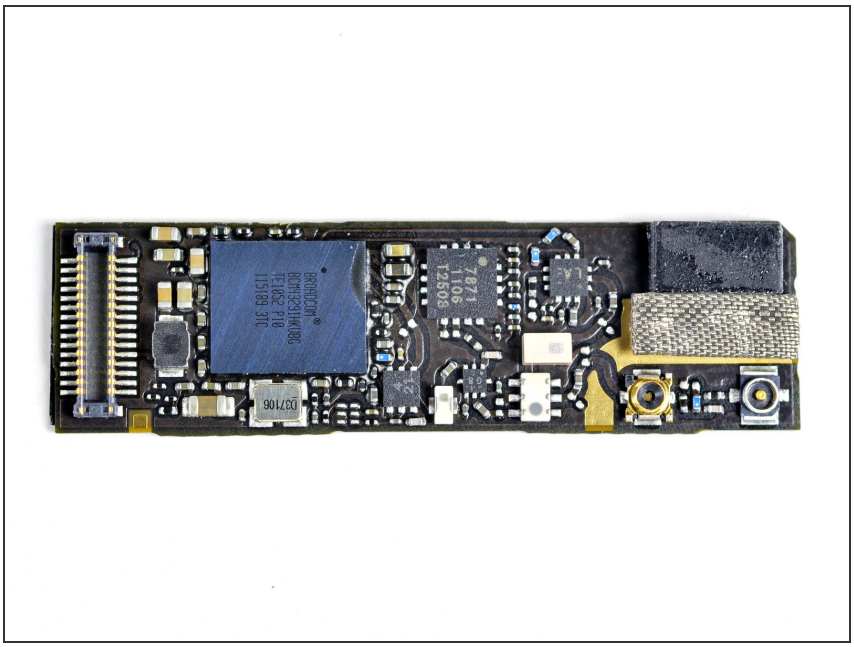




- After popping off a few EMI shields, we get a good look at the ICs on the logic board. They include:
  - Broadcom BCM5973KFBGH Microcontroller used for touchscreen
  - Broadcom BCM5974 CKFBGH capacitative touchscreen controller

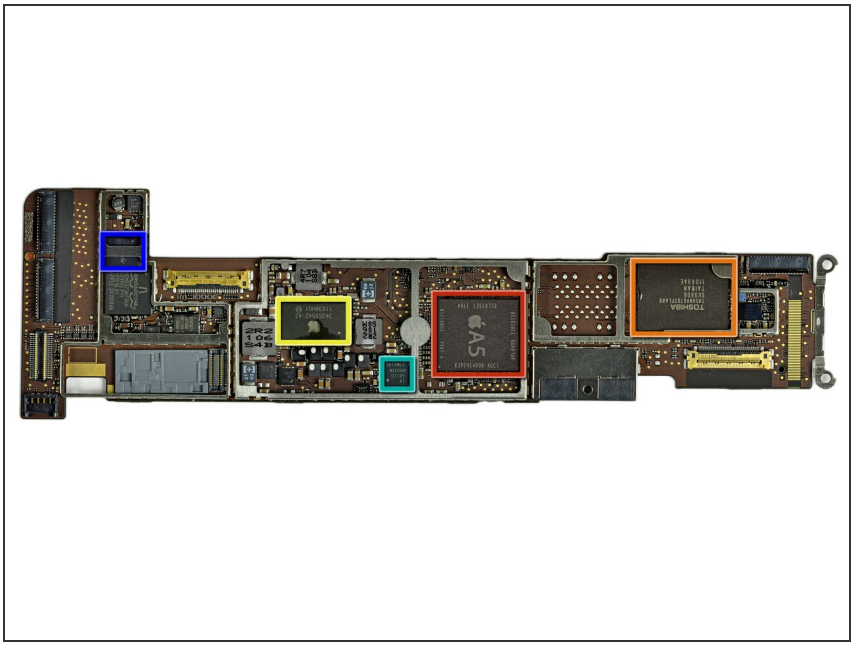
    This is the same combination as the original iPad - nothing new here!
- Interestingly, the Wi-Fi board is attached to the logic board under one of the EMI shields. It can be easily pried off its socket.

Step 12



- The Wi-Fi board; powered by another Broadcom chip, a BCM43291HKUBC. Broadcom has made this Wi-Fi/Bluetooth/FM tuner combo chip a ubiquitous part for smartphones - lots of design wins.
- This is the same part Apple used in both the first iPad and the iPhone 4.

Step 13



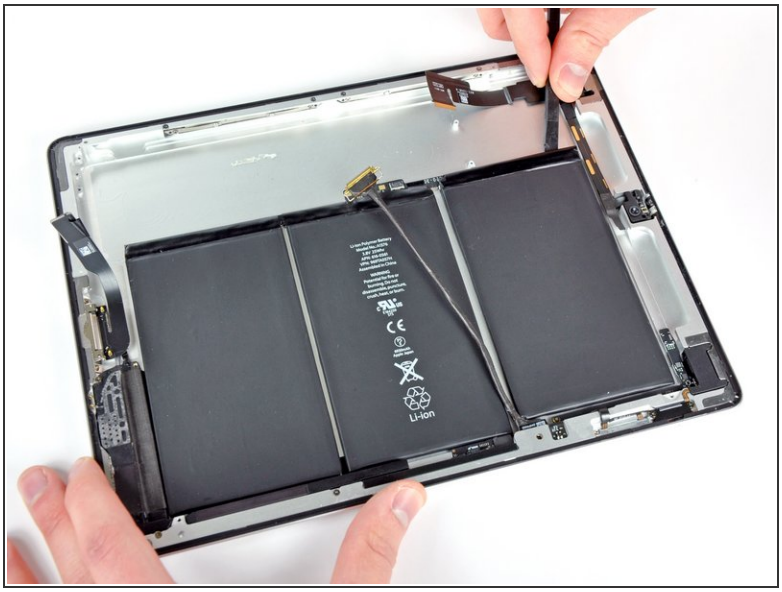
- Notable chips found on the logic board (click here for mega size):
- Apple 1GHz A5 dual-core Processor with a 200MHz bus and 512 MB of Samsung manufactured RAM.
- Toshiba TH58NVG7D2FLA89 16GB NAND Flash
- Apple 343S0542 - this looks like the Dialog Semi power management chip found in last year's iPad - all of those inductors and capacitors surrounding it are a clue.

- Texas Instruments CD3240B0 11AZ4JT G1 touchscreen line driver, working with the Broadcom BCM5973 and BCM5974 chips shown above.
- S6T2MLC N33C50V Power Management IC
- The A5 processor has manufacture dates of late January and mid-February 2011. Production was clearly ramping up through the last minute. It looks like the A5 processor is the APL0498, replacing the A4/APL0398 seen in the iPad 1 and iPhones.
- Apple-branded 338S0940 A0BZ1101 SGP. This looks like the Cirrus audio codec Chipworks found in the Verizon iPhone, but they'll have to get it off the board to make sure.

Step 14

- Backside of the logic board.
- That's it. Nothing to see here, move along!

Step 15



- Prying up the 3.8V 25 Watt-hour Li-Ion Polymer battery from the back case.
- The iPad 2 uses three massive Li-Ion cells to provide an impressive 10-hours of battery life.

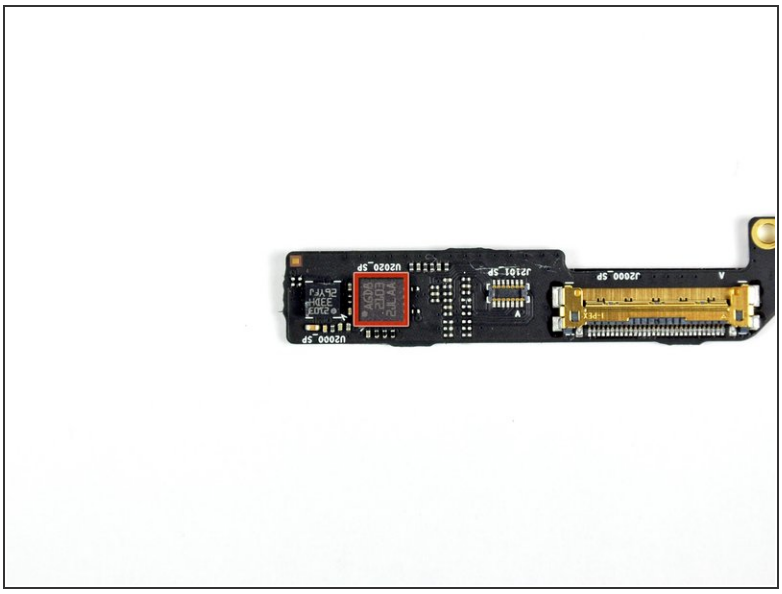
Step 16

- Removing a screw that secures the volume control board to the case.

Step 17

- Rear-facing camera comes out of its recess.

Step 18

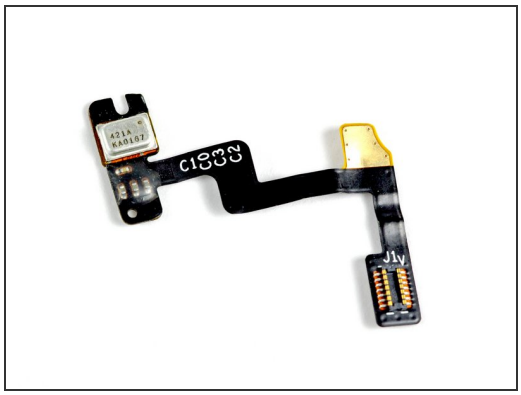


- Removing the board containing the volume control and silent/screen rotation lock button.
- On this little board the AGD8 2103 gyroscope rears its pretty little head, next door to the LIS331DLH accelerometer, both by STMicroelectronics.

Step 19

- After removing a screw securing the front-facing camera assembly to the case and peeling off a little more adhesive, the assembly can be removed.

Step 20

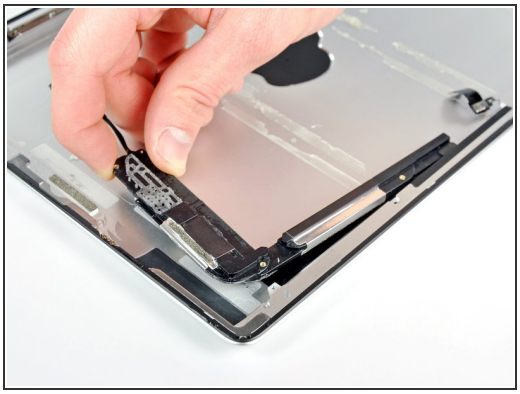


- The front-facing camera assembly includes the camera, headphone jack, and microphone.
- Front-facing camera.
- Microphone.

Step 21

- Removing the two screws securing the dock connector to the case.

Step 22



- After removing a few screws, the speaker assembly lifts out of the case.
- The speakers are very small, almost as though they were added as an afterthought.

Step 23

- iPad 2 Repairability Score: **2 out of 10** (10 is easiest to repair)
- The LCD is really easy to remove once the front panel is gone.
- Only standard Phillips screws were used -- no Pentalobular or Tri-Wing funny-business.
- The front panel is now glued to the rest of the device, greatly increasing the chances of cracking the glass when trying to remove it.
- The LCD has foam sticky tape adhering it to the front panel, increasing chances of it being shattered during disassembly.
- The battery is very securely stuck down to rear case, and you have to remove the logic board to remove it.
- You can't access the front panel's connector until you remove the LCD.
- Historical note: We initially awarded the iPad 2 a 4 out of 10, but in the process of writing our repair manual realized that it was far more difficult to repair than originally suspected.

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