



iPad 3 4G Teardown

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INTRODUCTION

Is it "The New iPad?" "iPad HD?" "iPad 3?" Who cares? All we know is this: It's here!

[video: <http://www.youtube.com/watch?v=VXuFZE9g3iE>]

Join us for the iPad 3 4G teardown. Follow [iFixit](#) on twitter for the latest up-to-date news.

TOOLS:

- [Heat Gun](#) (1)
- [Heavy-Duty Suction Cups \(Pair\)](#) (1)
- [iFixit Opening Picks set of 6](#) (1)
- [Phillips #00 Screwdriver](#) (1)
- [iFixit Opening Tools](#) (1)
- [Spudger](#) (1)

Step 1 — iPad 3 4G Teardown



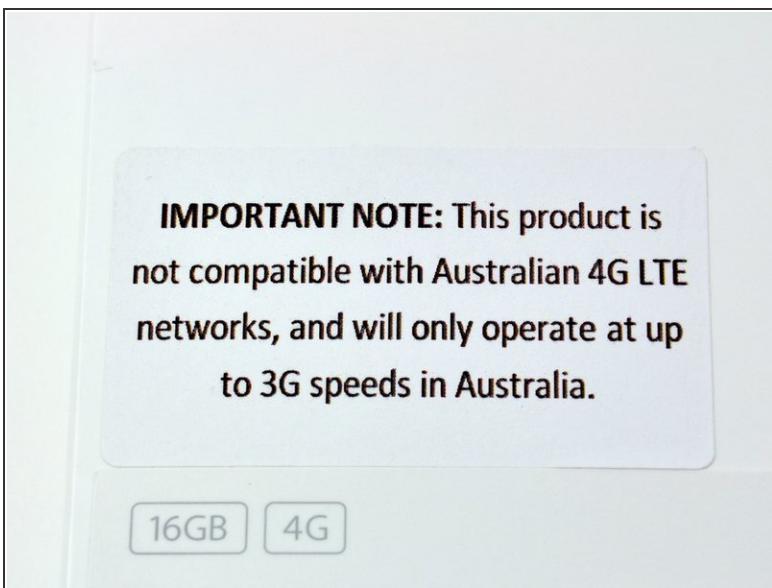
- [Luke](#) flew to the Telstra store in Melbourne, Australia and was first in line to get the iPad 3 for our deconstructive pleasure.
- A big thanks to [Macfixit Australia](#) for letting us use their facility for the teardown!
- Tech Specs:
 - Dual-core Apple A5X processor
 - 9.7 inch LCD, backlit in-plane switching LED with 2048×1536 pixel Retina display
 - Quad-core graphics processor
 - 16, 32, or 64 GB flash memory
 - 5 MP HD rear-facing camera

Step 2



- It's go time! What does an iFixit teardown expert need to dismember the newest iPad at midnight on the other side of the world?
- Answer: A [Pro Tech Toolkit](#), some good ol' Red Bull, and—of course—the [iPad 3](#).
- Despite our office being in the United States, and the iPad 3 being debuted in Australia, we are fairly confident that [it will still work](#).

Step 3



- We spoke too soon. It appears that 4G LTE on the iPad 3 *does not* actually work in the land of Oz.
- Uh-oh, which iPad is this? iPad 2 3G? iPad 3 4G? iPad N (N+1)G?
- Luckily for everybody, the model number is unique, unlike some of Apple's [other](#) products. The model number is A1430.

Step 4



- So this is what the rear panel of a new "new iPad" looks like. Do you know what it sort of [reminds us of](#)?
- The 5 MP iSight rear-facing camera boasts autofocus, face detection, 1080p HD video recording, and video stabilization. Definitely a great improvement over last year's weak 0.7 MP rear-facing camera.
- The 2048×1536 pixel Retina display doesn't do much to amaze us once we turn the iPad off, but we didn't fly halfway across the world just to play [Punch a Hipster](#).

Step 5



- Some [heat](#), [guitar picks](#), and [a plastic opening tool](#) make quick arduous work of [removing](#) budging the front panel.

Step 6



- Just like its predecessor, the new iPad is very difficult to disassemble. Adhesive secures the glass to the case, making common repairs and battery replacement difficult.
- Apple is estimated to ship 1 million units on launch day, and the environmental impact of this unfortunate design choice will be significant.
- We've written extensively about the problems with Apple's difficult-to-repair iPad design over on [iFixit.org](http://ifixit.org):
 - [Ever Broken a Textbook Beyond Repair? Now, with iBooks, You Can!](#)
 - [Yes, the iPad is Repairable—But Just Barely.](#)

Step 7



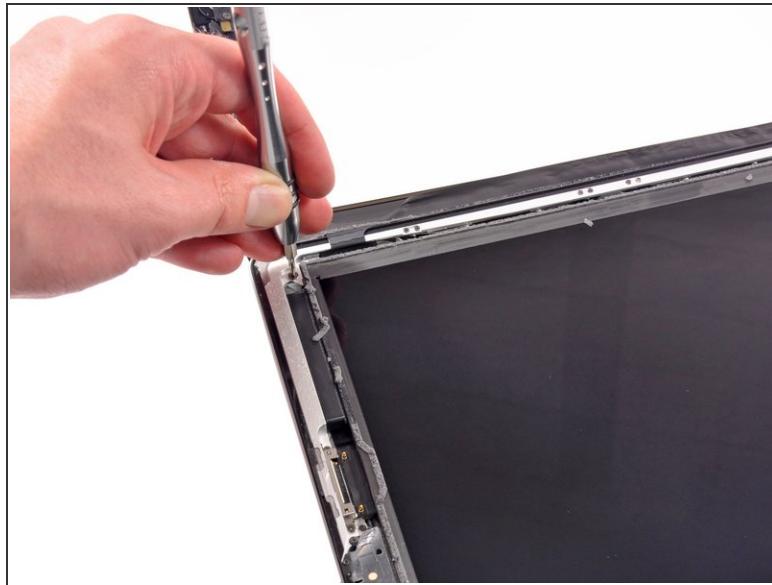
- A heavy-duty display should only be removed with [heavy-duty suction cups](#).
- The first legitimately-purchased, legitimately-owned iPad 3 is now also the first legitimately-opened iPad ... in the world.
- Apparently, the new iPad has a face, and it's not happy. [Look familiar?](#)

Step 8



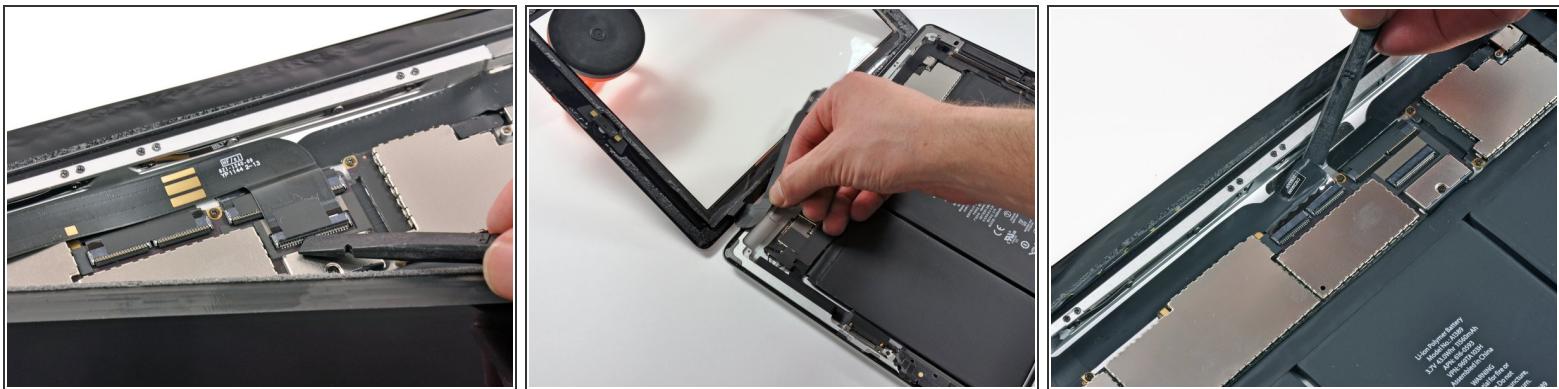
- And now, a message from our sponsor: us!
- We don't just make awesome teardowns—**we sell [parts](#). And [tools](#)! Lots and lots of tools.**
- Like this [handy-dandy electronics tool kit](#) that we used to take apart the new iPad. You know you want one. It'll pay for itself the first time you use it!
- We sell [Mac parts & upgrades](#), parts for [iPhone screen repair](#), kits for fixing the infamous [Xbox Red Ring of Death](#), and tons more.
- **We need your support** to continue building the [free repair manual](#) for everything in the world.

Step 9



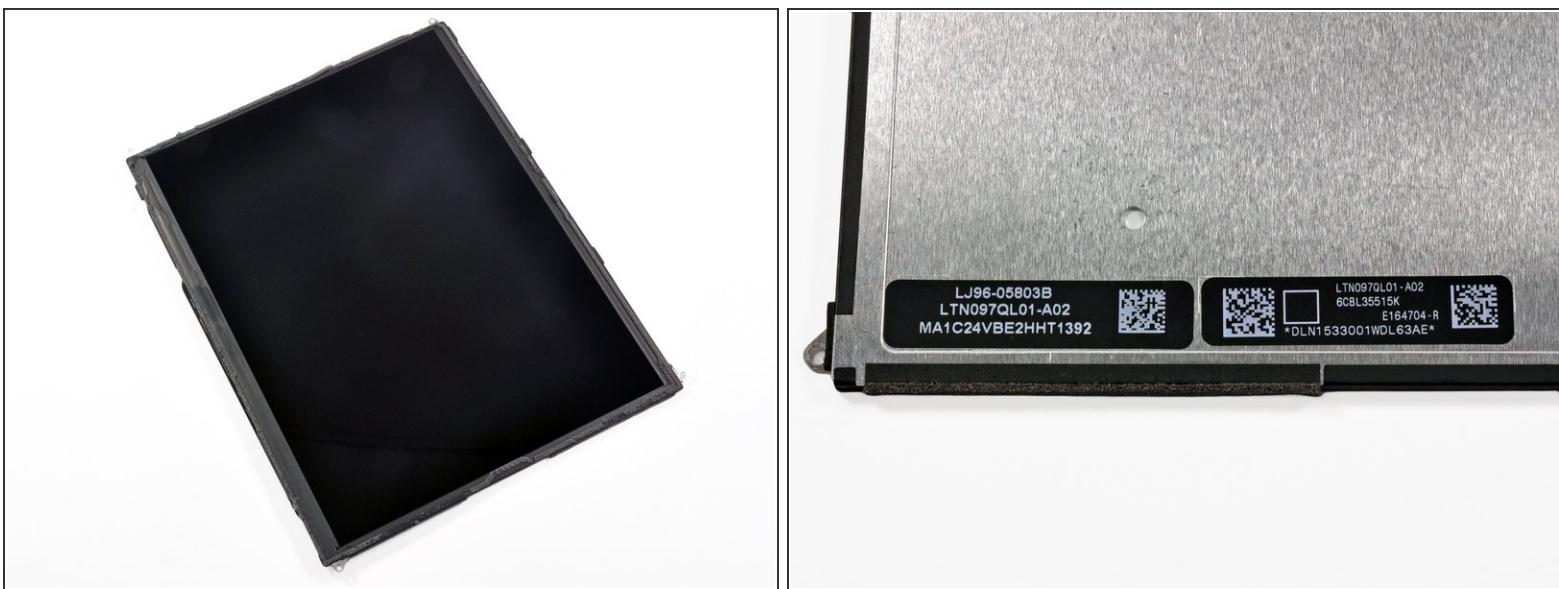
- Well, this display is screwed...to the case. Luckily, we have a BS degree in removing screws, so this poses no challenge.
- Rather than enjoy the 264 pixels per inch on this brand new device, we opt to remove the acclaimed display. Why? Because we're iFixit, and that's how we roll.
- As we lift the LCD, we hear the cries of 3,145,728 pixels being dislodged from their homes inside the iPad 3.

Step 10



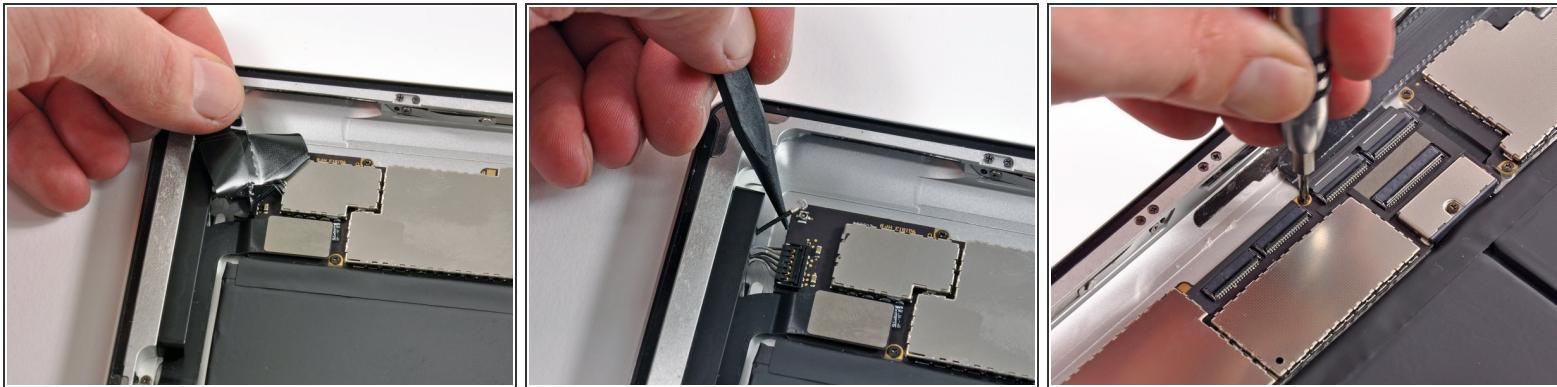
- It's time to cut spudge the umbilical cord on the display and touchscreen.
- As we mentioned in our sneak-peek [video](#), the display connectors in the iPad 2 and iPad 3 are different, meaning the two displays are incompatible...for now.

Step 11



- The model numbers on the back of the 9.7 inch LCD lead us to believe this is a [Samsung LCD](#).
- Beside the numbers we find three mysterious matrix barcodes. They allure the teardown expert, a dubious distraction indeed. What do they do? Our best guess: crash your iPhone or turn it into an iPad...scan at your own risk.

Step 12



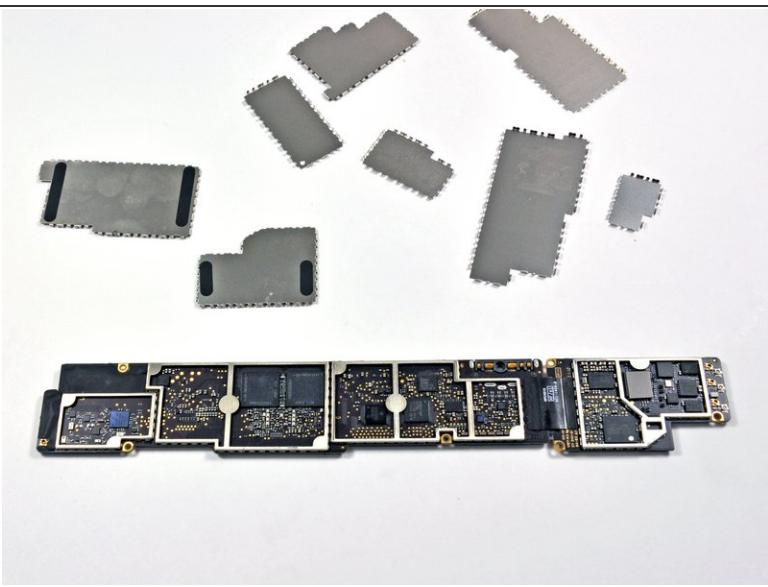
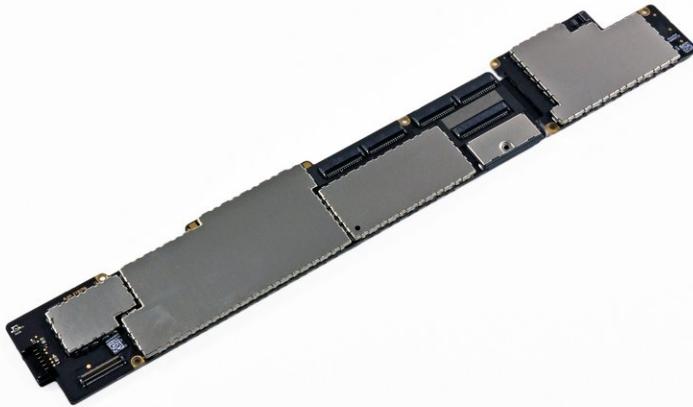
- Connectors and screws, connectors and screws, to secure a logic board, that's what you use!
- We might not be very good at writing poetry, but with [spudger](#) and [screwdriver](#) in hand, we are masters of our craft.

Step 13



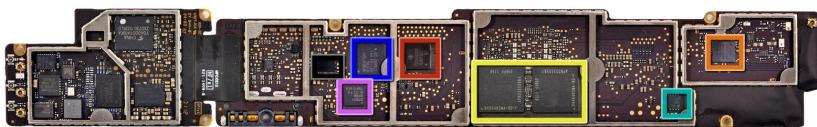
- Come now, iPad. Let go of your logic board, please.
- Thank you Siri... Siri? Are you there? (*silence*)

Step 14



- The logic board is out!
- Using some leftover pixie dust from our [iPhone 4S teardown](#), we will remove the EMI Shields to fly off so we can take a peek at the logic board.

Step 15



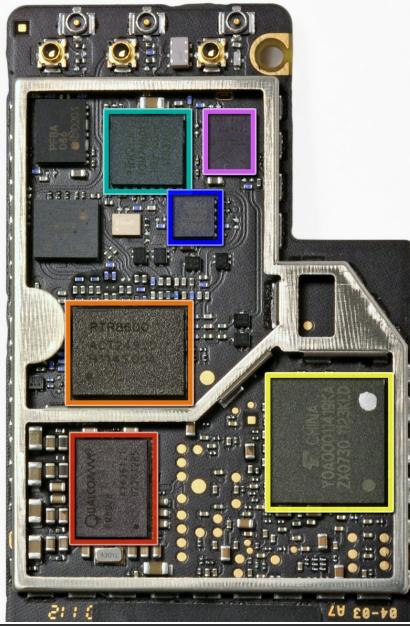
- Chips, Chips, Chips. Here's some of the salsa on the non-A5X side of the logic board:
 - Texas Instruments CD3240 driver device
 - Broadcom [BCM4330](#) 802.11a/b/g/n MAC/baseband/radio with integrated Bluetooth 4.0+HS and FM transceiver
 - 2 x 4Gb Elpida LP DDR2 = 1 GB DRAM in separate packages in a 64-bit configuration
 - Fairchild FDMC 6683
 - Broadcom BCM5973 I/O controller
 - Broadcom BCM5974 microprocessor
 - Apple 338S0987 (Cirrus Logic audio codec)

Step 16



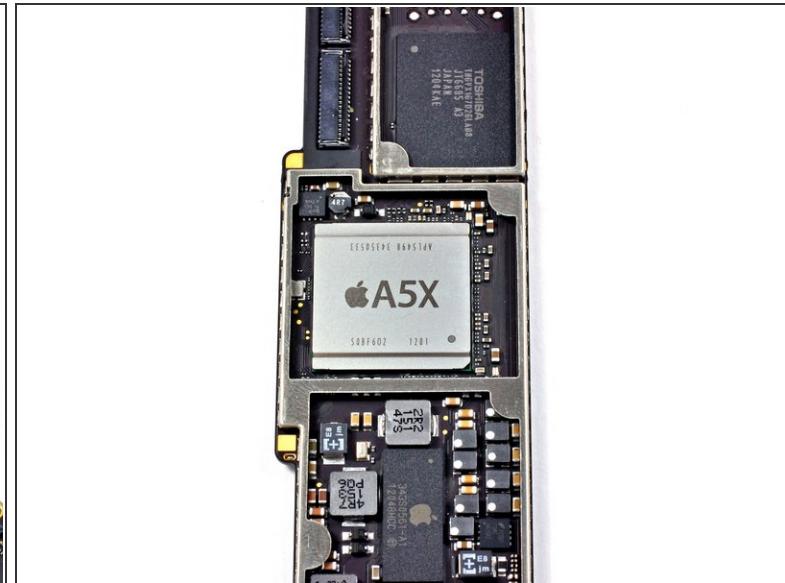
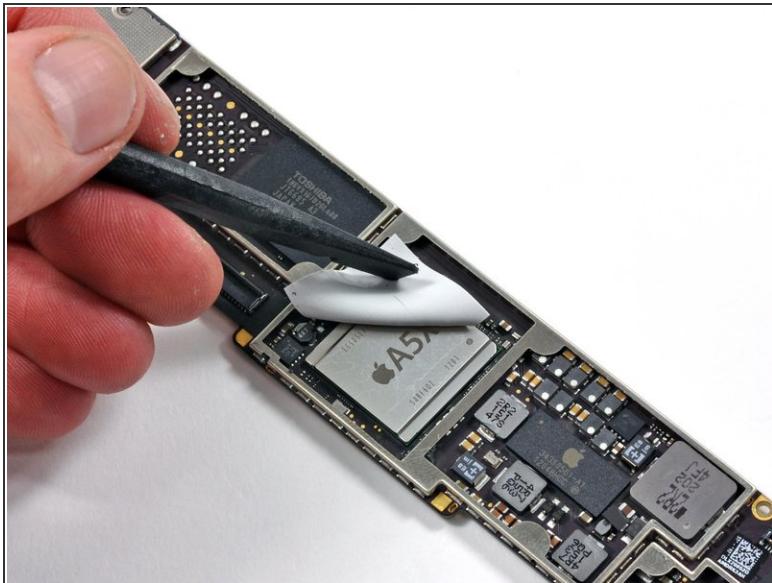
- We've got one more message from our vainglorious sponsor.
- We also make software for teaching people to do things. [Dozuki](#) makes it easy to create vibrant how-to manuals.
- Dozuki is great for:
 - [**Standardized work instructions**](#): improve quality by documenting how to get things done, one step at a time.
 - [**Building product support sites**](#): make your customers love you by teaching them how to do amazing things.
 - [**Training and e-learning software**](#): we've used Dozuki to teach over ten million people to repair electronics.
 - [**Online community platform**](#): build a knowledge base of expert knowledge with Answers, the Q&A engine that drives the popular [iFixit Answers](#).
- Lots more: Dozuki shines in any situation where you need to harness the knowledge of experts to teach people to do things in the real world.

Step 17



- ...and here's some more salsa on the other end of the non-A5X side:
 - Qualcomm PM8028 Power Management IC
 - Qualcomm RTR8600 multi-band/mode RF transceiver for 3G and 4GLTE bands
 - Toshiba Y0A0000 Memory MCP
 - Triquint [TQM7M5013](#) quad-band linear power amplifier module
- Avago A5904
- Skyworks SKY77468-17 front-end module

Step 18



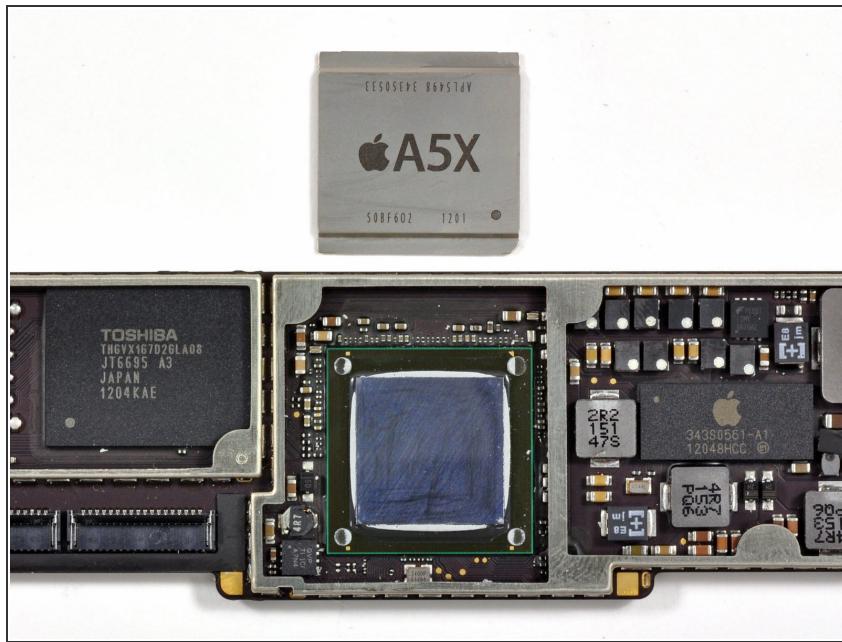
- Some crafty spudgering reveals the A5X processor in all its glory.
- Like the A5, the A5X system features a 1 GHz dual-core CPU. The upgrade that earns it an 'X' is the new GPU, which Apple [claims](#) outperforms even Nvidia's Tegra 3 processor.
- This particular chip was manufactured in the first week of 2012. Maybe our iPad marks the start of [the end of the world](#).
- Not prepared? There's an [app](#) or [two](#) for that...

Step 19



- An entirely-new side of the logic board:
 - Apple A5X processor
 - Apple 343S0561 - This IC looks like an updated version of the 343S052 that we found in the iPad 2, and is used for power management.
 - The NAND, part number THGVX1G7D2GLA08 is a 16 GB 24 nm MLC Flash from Toshiba
 - Qualcomm MDM9600 - 3G and 4G wireless modem
 - Skyworks 77469
 - Avago A7792
- **A big and hearty thanks to [Chipworks](#) for helping us ID these chips!**

Step 20



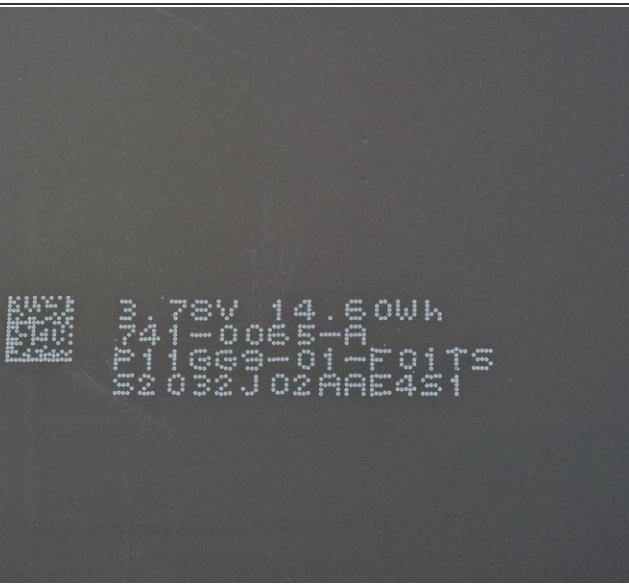
- So here's a bonus for all of you: the A5X cover removed.
- Underneath the cover we find the A5X processor flip chip mounted onto the carrier PWB.
- It's a safe bet that the A5X cover is a heat sink for the CPU, given there's thermal paste underneath and a thermal pad on top of the cover.
- The A5X [measures](#) 12.82 mm x 12.71 mm (162 mm²) which is 36% larger than the A5.

Step 21



- As is the case with [most tablets](#), the iPad 3 is really just a giant battery.
- Some help from our spudger allows us to remove the battery from the device for further inspection.
- While the iPad 2 housed a formidable 25 watt-hour Li-ion battery, the iPad 3 has upped the ante to the tune of 42.5 watt-hours.
- Its 3.7 volts and estimated 10 hours of use (9 with cellular data network) are comparable to that of the iPad 2, but we assume the extra 17.5 watt-hours are put to good use powering the extra RAM and greatly improved GPU.
- The battery has three cells, each approximately 12.5 cm x 6.5 cm x 4 mm. The iPad 2's battery cells were 10.8 cm x 6.3 cm x 2.7mm.

Step 22



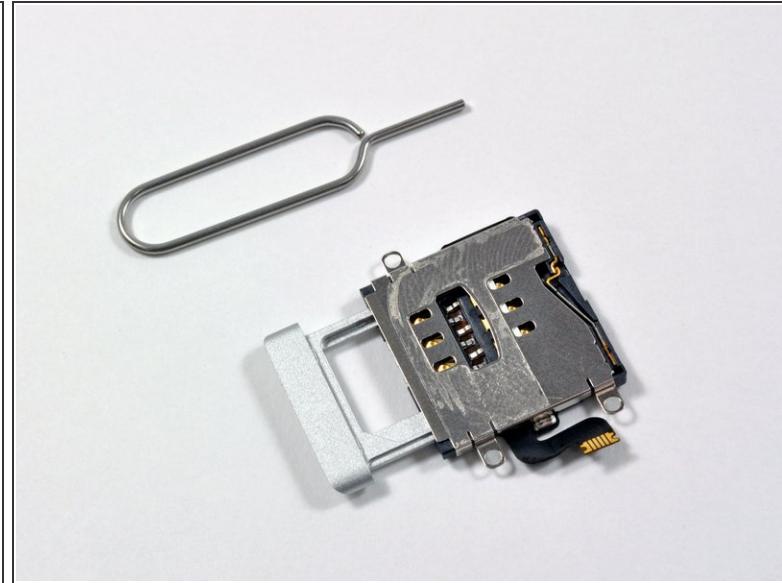
- Each separate cell lists its rating of 3.78 volts and 14.60 watt-hour. They're graced with some more matrix barcode tags and wonderful inscriptions that read 741-0065-A P11GG9-01-F01TS. Swoon.
- Chris Foresman at Ars Technica compared the energy density to the battery in the iPad 2, and it comes out about the same—around 0.0014 watt-hour / mm³.
- Apple physically increased the size of each cell by about 70%, explaining the big jump from 25 to 42 watt-hours.
- Apple claims the new iPad is environmentally friendly with a "Recyclable aluminum and glass enclosure." The materials may be recyclable, but the assembled unit is not. We spoke yesterday with Steve Skurnac, president of SIMS Recycling Solutions—one of the largest electronics recyclers in the world. He told us, "Sealed units make it difficult to remove the batteries. From a recycler's point of view, the hazardous components [like batteries] need to be easily separated or removed."

Step 23



- As we progress through the teardown, what remains is just the carcass of a once mighty iPad.
- Being the vultures that we are, let's continue picking away at the remains of this aluminum beast...first on our list is the dock connector.
- The dock connector seems to have the same pin layout as the iPad 2, we have yet to determine whether or not the dock connectors are swappable.
- Pesky, finicky screws! Be gone and let us remove the antenna in peace.

Step 24



- Get out of the way, ribbon cable! Let us get a look at that micro-SIM card slot.
- Like the other iPads with micro-SIM cards, the iPad 3 4G has a user-accessible micro-SIM card slot that can be ejected with the help of a handy [SIM card eject tool](#).

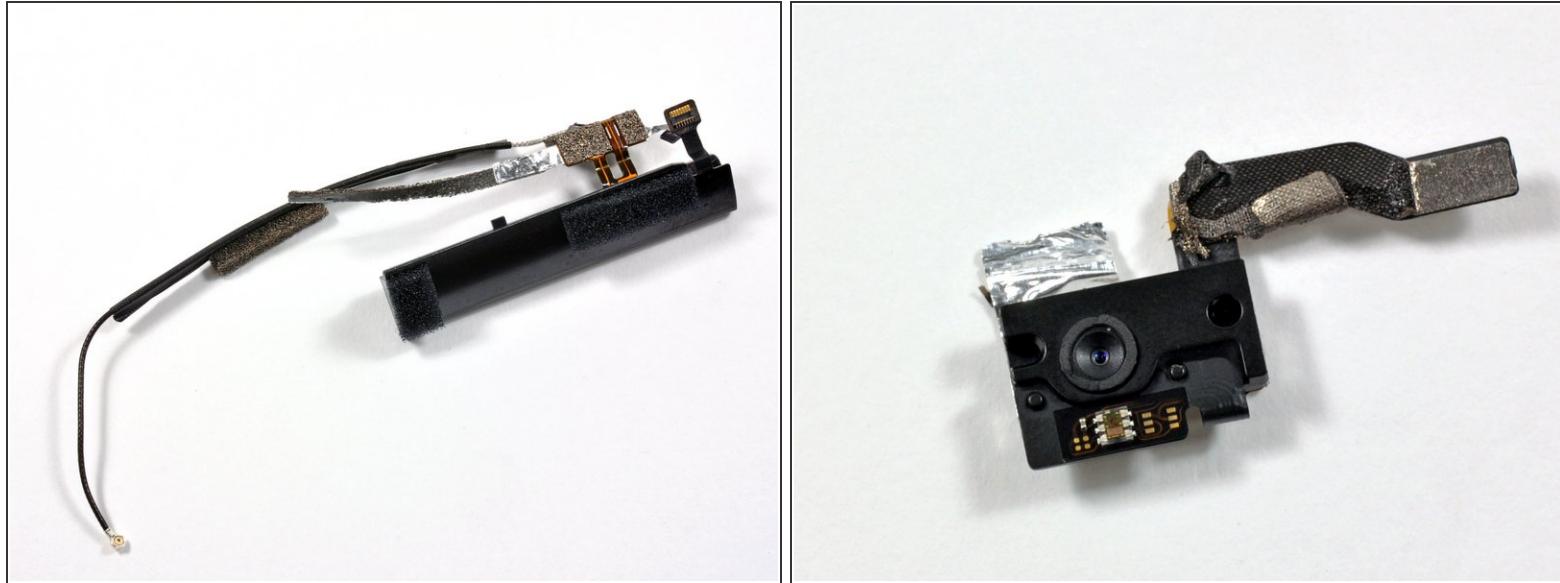
ⓘ Sorry, former [Amp'd Mobile](#) users, this iPad can only be used on AT&T and Verizon networks.

Step 25



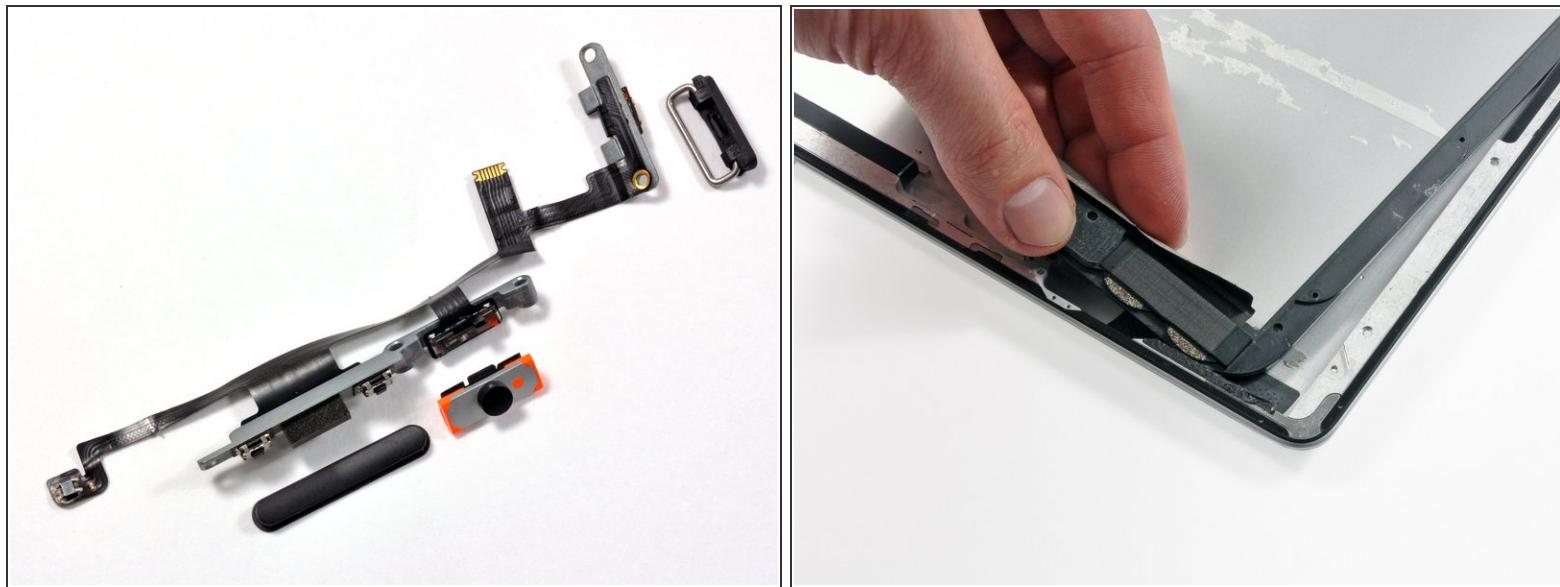
- The headphone jack and one of the many wireless antennas come out as a single unit. Bummer.
- Well hello there! Fancy to meet you here iSight camera.
- You have what specs? Oh, a 5 element lens, an IR filter, and auto exposure. Stop it iSight, you're making us blush...
- **UPDATE:** [Chipworks found out that](#) the primary camera is indeed the same image sensor Apple used on the iPhone 4: Omnivision OV5650, 1.75 um pixel pitch, 5 MP back illuminated CMOS Image Sensor.
- The secondary image sensor is also an Omnivision, the OV297AA. 0.3 Mp, 3.0 um pixel pitch CMOS Image Sensor

Step 26



- Pulling out other fine parts, such as the front-facing camera and antenna.
- Whether you're video chatting or fixing your hair, the front-facing camera is sure to meet all of your low resolution photography and video needs.

Step 27



- What an array of buttons and switches! This truly is a sight to see. Buttons of all kinds. Switches of all types. So many!
- The speaker assembly is the next victim on our list. Farewell speakers!

Step 28



- iPad 3 Repairability Score: **2 out of 10** (10 is easiest to repair)
 - The LCD is easy to remove once the front panel is gone.
 - The battery is not soldered to the logic board, making the replacement process a tad less difficult.
- Just like the iPad 2, the front panel is glued to the rest of the device, greatly increasing the chances of cracking the glass when trying to remove it.
- Gobs, gobs, and gobs of adhesive hold down everything in place, including the prone-to-start-a-fire-if-punctured battery.
- The LCD has foam sticky tape adhering it to the front panel, increasing chances of the front panel being shattered during disassembly
- You can't access the front panel's connector until you remove the LCD.

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