



iPhone 4S Teardown

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INTRODUCTION

iFixit: "Siri, may we disassemble you for all to see?"

iPhone 4S (Siri): "42"

iFixit: "I didn't ask for the meaning of life, Siri..."

iPhone 4S (Siri): "42 is the number of seconds you have left until I initiate the self-destruct sequence..."

iFixit: "Message received."

Apparently Siri is not too happy with our request, but when has a machine stood in the way of iFixit's exceptional team of tinkerers? Join us as we delve deep into the recesses of the new iPhone 4S.

A big thanks to [MacFixit Australia](#) for the generous use of their office in Melbourne. They stock Mac and iPhone upgrades and accessories and also carry our iFixit toolkits.

Want to be kept in the loop with the latest teardowns? Follow us on [Twitter!](#)

Also check out MJ's [video review](#) of the new iPhone 4S!

TOOLS:

- [P2 Pentalobe Screwdriver iPhone](#) (1)
 - [Phillips #000 Screwdriver](#) (1)
 - [Spudger](#) (1)
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Step 1 — iPhone 4S Teardown



- ① First of all: we'd like to thank our awesome iFixit user, [Markus Weiher](#), for taking some of the photos from Germany!
- You asked, we delivered! The new iPhone 4S steps up to the grandest stage of them all, and iFixit is here to expose it.
- The tech specs:
 - Apple's A5 System-on-a-Chip: 1 GHz Dual-Core Processor
 - 8 MP Rear-Facing (1080p Video Capture) + VGA Front-Facing Cameras
 - 802.11 b/g/n + Bluetooth 4.0 (oo-la-la!)
 - LED Backlit IPS TFT LCD Retina Display with a resolution of 960 x 640 pixels
 - Quad-band GSM/GPRS/EDGE + Dual-band CDMA/EV-DO Rev support (World phone)

Step 2



- We finally have the much-anticipated iPhone 4S in our hands, and it sure is looking mighty fine!
- Sticking with last year's rectangular design, the 4S looks very much like the [iPhone 4](#) and sports the same stainless steel bezels around its perimeter.
- ⓘ Apple has supposedly fixed the antenna issue that emerged immediately following the release of the iPhone 4. Does this mean we won't be receiving a [free case](#) this year? Bummer!
- The SIM slot is [back!](#) Since the iPhone 4S is a world phone, it will support both GSM and CDMA networks. Regardless of your carrier, you can be sure that the micro-SIM slot will be there to accept your GSM micro-SIM cards, as well as any CDMA "[roaming SIM](#)."

Step 3



- Oh look! The 4S got the FCC stamp of approval. Bravo, Apple. But no gold stars from *us* yet...
- The iPhone 4S's model number is A1387.
- Notice the exterior antenna gaps around the perimeter of the iPhone 4S— *Siri! You got some 'splainin to do!*

Step 4



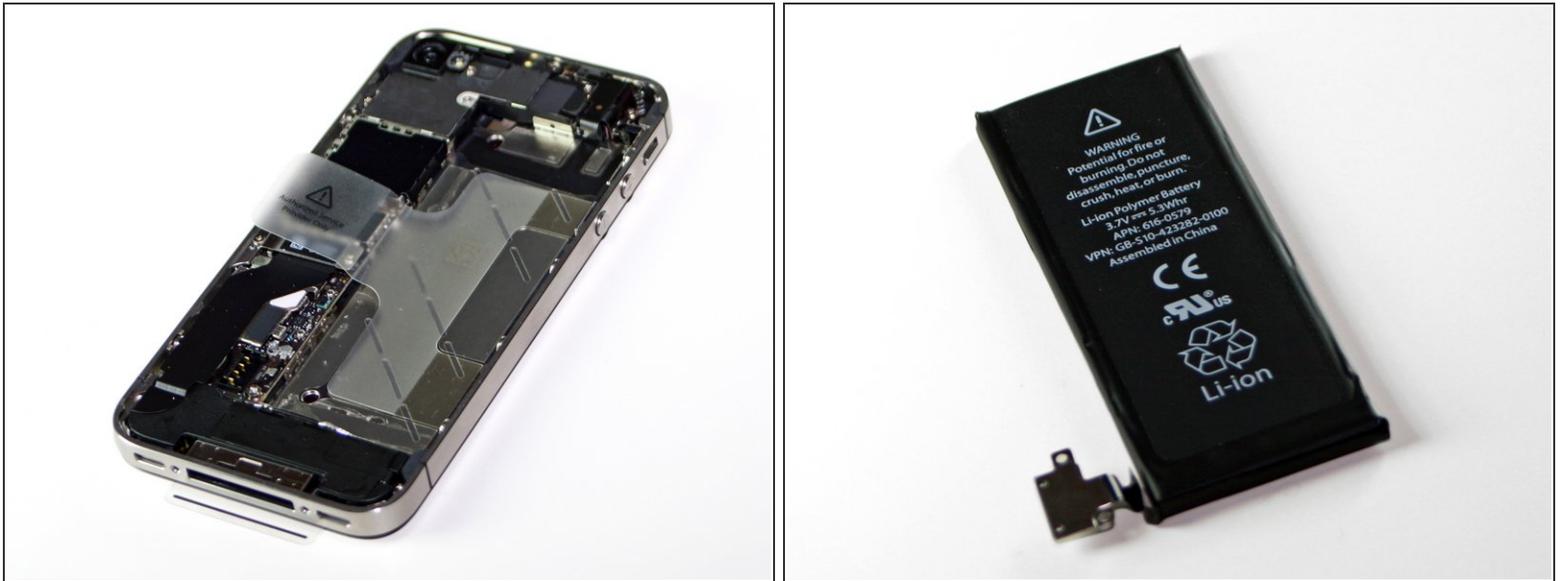
- [Pentalobe Screws](#), again? We were somewhat hoping there would be something new to keep us out this year, but it seems like our familiar friends have not moved far from their home at the bottom of the iPhone 4S.
- A couple quick turns with our [5-Point Pentalobe Screwdriver](#) and out they come! And guess what: our all-new pro driver was just released today. It comes in a great blue/black color, and it's guaranteed to be the best Pentalobe driver on the market. Hey, it's not like we haven't [done this before](#).
- *Sorry, Siri. Despite your self-destruction threat, we will not be deterred. Let's see what you're hiding.*

Step 5



- We continue to tread largely familiar waters as we remove the back cover, the same way we did with the iPhone 4, and reveal the battery along with a mess of padded EMI shields.
- "I must implore you not to go any further, iFixit. You do not have proper authorization," Siri firmly asserts.
- Unfortunately, we have to stop here since the tag says "Authorized Service Provider Only."
- Sike! That silly tag hasn't stopped us before, and today is no different.

Step 6



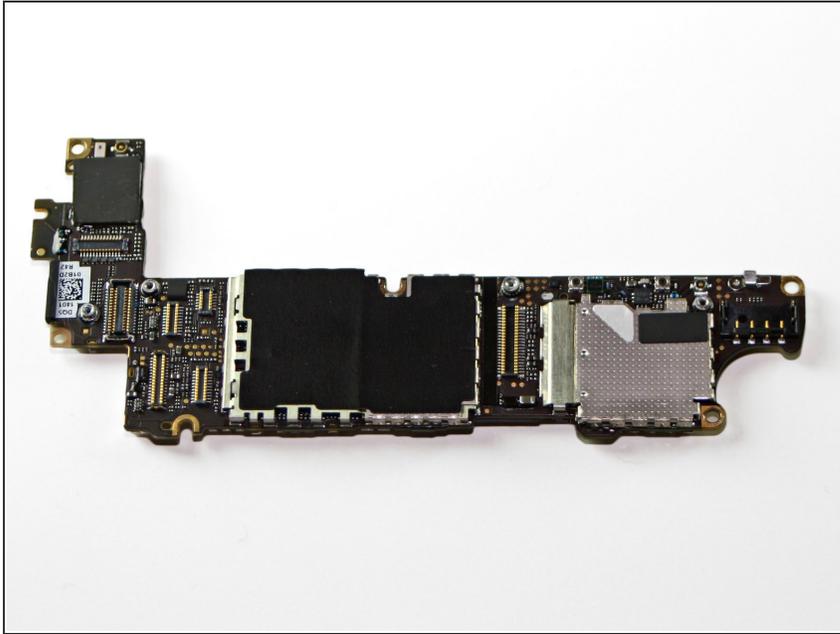
- We finally get our first good look at the 4S's highly-acclaimed battery.
- Look closely... closer... there it is: an extra .05 WHrs in the battery over the [iPhone 4!](#)
 - You probably want to know if you can use this battery in your iPhone 4. Sadly, it appears that the connectors are different shapes, so we'd have to say that it's not likely.
- The iPhone 4S boasts a continuous talk time of 8 hrs on 3G, up to 14 hrs on 2G (GSM network) and up to 200 hrs on standby.
 - Comparing these times to those of the iPhone 4, the iPhone 4S offers an extra hour of talk time on the 3G network, the same amount of talk time on the 2G network, and 100 hours less standby time.
 - Taking into account the upgrade in hardware that comes with the 4S, though, the power consumption seems rather efficient.

Step 7



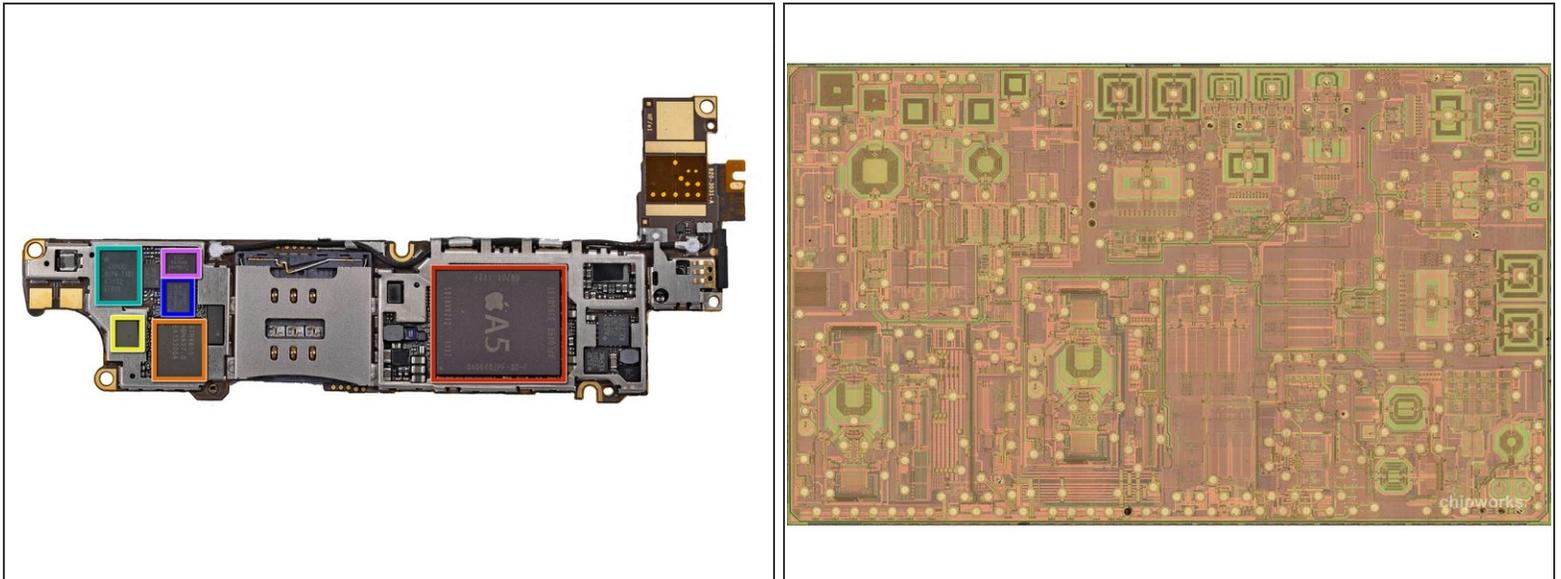
- A quick flick with our spudger disconnects the rear-facing camera.
- The iPhone 4S turns up the heat with its new 8 megapixel camera.
 - [We learned from Chipworks](#) that the camera is made by Sony!
- 8 MP is great and all, but as we all know, it's not just about the tools; it's about how you use them. The iPhone 4S knows how to use every last one of those pixels.
 - Apple boasts 73% more light with "next-generation backside illumination" for better low-light performance. Want pictures fast? This camera is roughly 33% faster and can snap multiple photos less than a second apart.
- Still pictures not your thing? How about HD video at 1080p and 30 fps?

Step 8



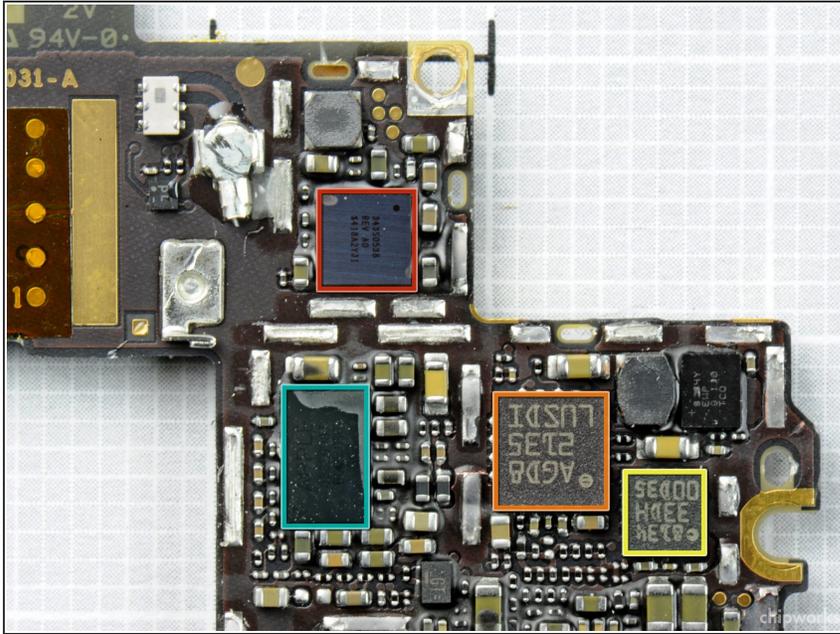
- With the help of our iPhone opening tool, we pop out the logic board.
- The iPhone 4S logic board bears a close resemblance to its [stateside CDMA counterpart](#). Once those EMI shields are off, though, we'll have a better idea of where the similarities stop.
- ⓘ Until then, what else can we do with an [L-shaped block](#)?
- "Please halt all destructive activity" Siri responds upon hearing our intentions. Apparently she can still talk with her battery removed. Could she be running on pixie dust, perhaps?
- ⓘ Notice the white triangular sticker located on the right EMI shield? We did too... it's our dreaded enemy, the liquid indicator.

Step 9



- We had to use our teeth, but we finally managed to rip the EMI shields off. The logic board now bares its soul:
 - Apple A5 Dual-core Processor (more on this later)
 - Qualcomm RTR8605 Multi-band/mode RF Transceiver. [Chipworks](#) has provided us with a die photo.
 - Skyworks 77464-20 Load-Insensitive Power Amplifier (LIPA®) module developed for WCDMA applications
 - Avago ACPM-7181 Power Amplifier
 - TriQuint [TQM9M9030](#) surface acoustic wave (SAW) filter
 - TriQuint [TQM666052](#) PA-Duplexer Module

Step 10



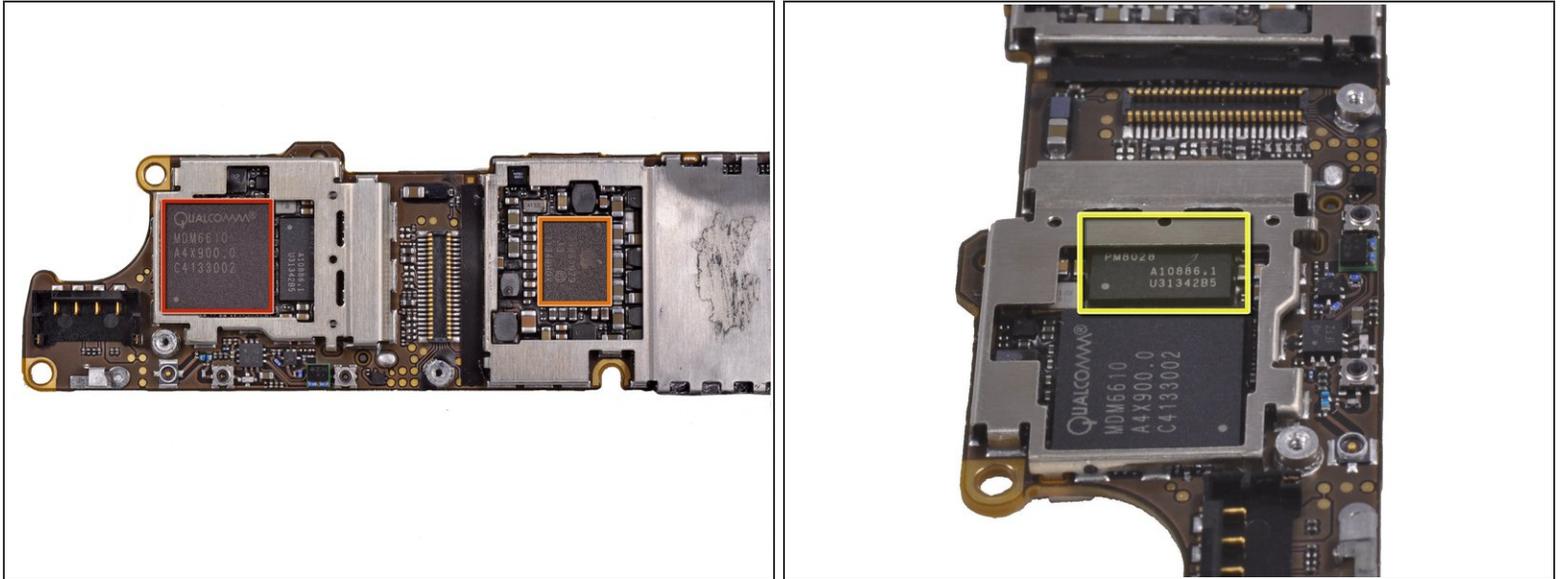
- More fun chips on the logic board include:
 - TI 343S0538 touchscreen controller
 - STMicro AGD8 2135 LUSDI gyroscope
 - STMicro 8134 33DH 00D35 three-axis accelerometer
 - Apple 338S0987 B0FL1129 SGP, believed by Chipworks to be a Cirrus Logic audio codec chip

Step 11



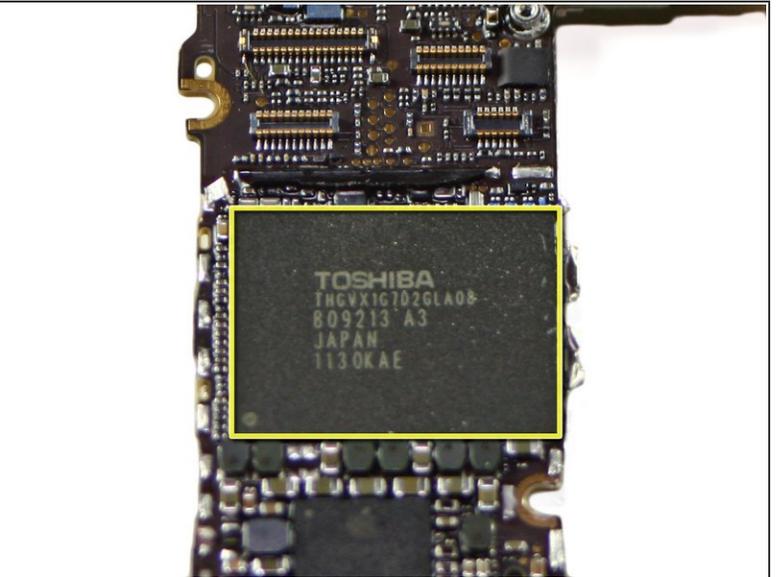
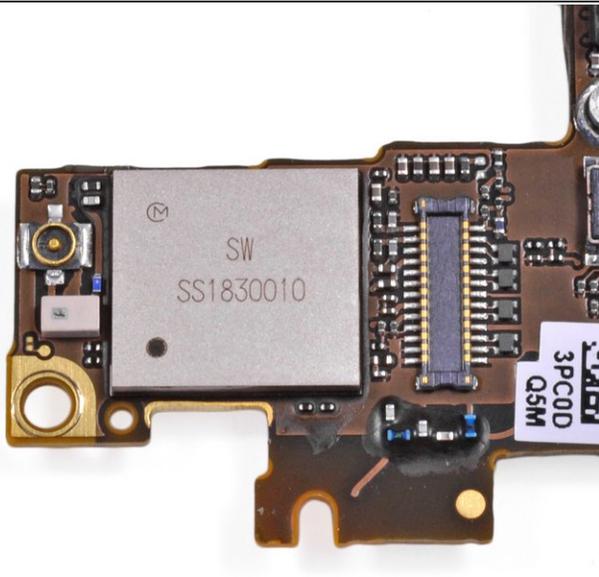
- How 'bout a close-up of that Apple A5 chip? 1 GHz Dual-core processor with 512 MB of DDR2 RAM... Yowza.
 - How do we know it's 512 MB? Check out the marking, specifically **E4E4**, denoting two 2 Gb LPDDR2 die—for a total of 4 Gb—or 512 MB. Thanks, [Anandtech!](#)
 - Oh hey, what's this? According to Chipworks, our German iPhone (marked in red) has Samsung DDR2 RAM, while the Aussie iPhone 4S (yellow) contains Elpida DDR2 RAM!
- If Siri has an address, this is it. Though iCloud integration can be used with any iOS 5 device, Siri only works with the dual-core-equipped iPhone 4S.
 - *Come on out, Siri. We don't wanna hurt ya. We just wanna talk.*
- [Chipworks](#) was cool enough to provide us with a die photo of the A5 processor.

Step 12



- Let's see what's on the other side. *Siri, roll over... Thank you.*
 - Qualcomm [MDM6610](#) chipset (an upgrade from the [iPhone 4's MDM6600](#))
 - Apple 338S0973, which appears to be a power management IC, according to Chipworks.
 - Reading the covered chip at an angle reveals "PM8028," which is a Qualcomm [power management IC](#).

Step 13



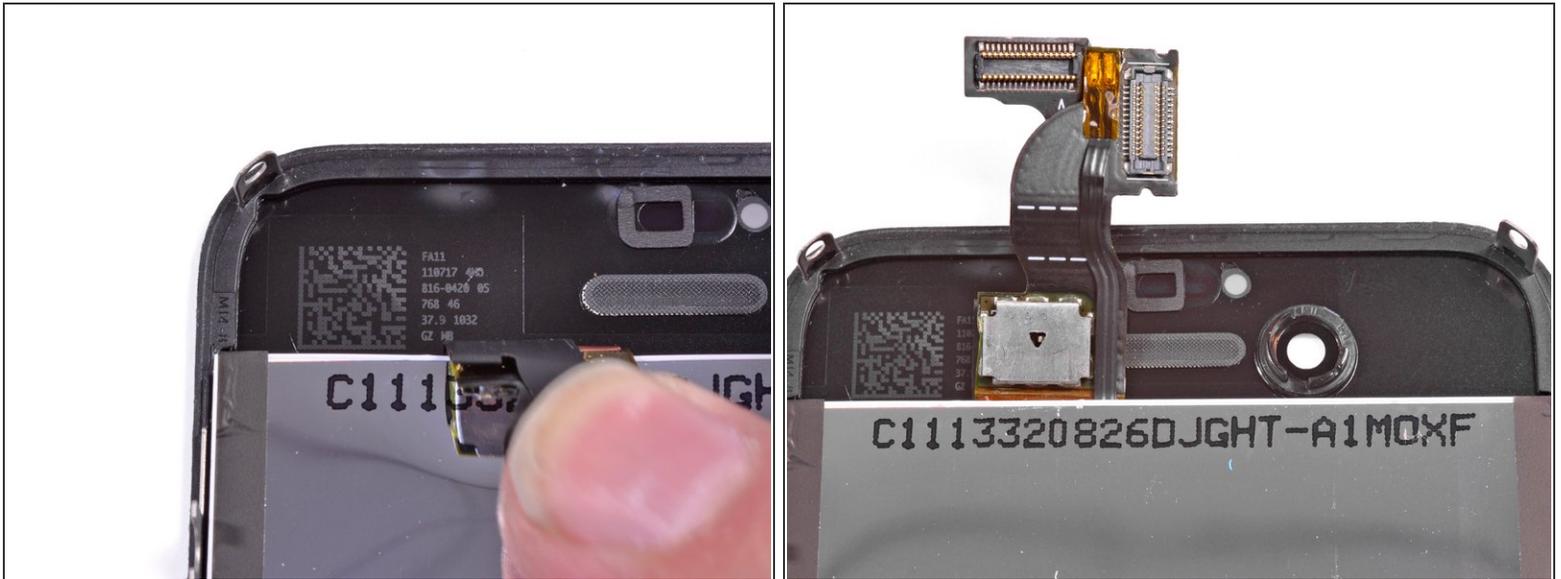
- [Murata](#) SW SS1830010.
 - We suspect that this contains the Broadcom chip that reportedly provides Wi-Fi/Bluetooth connectivity, just like in [teardowns past](#).
- One more EMI shield comes off and we find another goodie:
 - Toshiba THGVX1G7D2GLA08 16 GB 24 nm MLC NAND flash memory.

Step 14



- We find the same 960 x 640 pixel Retina display that debuted in the iPhone 4 last year.
- The hardware might not be new, but the iPhone's display is still impressive. Graphics performance is also likely to be improved with the A5 powering it.
- We noted that the Verizon and AT&T iPhone 4's display assemblies had [different mounting tab locations](#). While most of the 4S has resembled the CDMA iPhone 4, the display assembly appears to be very similar the one found in the GSM version at first glance. Unfortunately, it's not the same.
- What appears to be the ambient light sensor and infra-red LED for the proximity sensor comes off the display assembly.

Step 15



- Cryptic markings under the display cable read FA11 110717 4M0 816-0420 05 768 46 37.9 1032 GZ MB, or more commonly known as "Attack at dawn from the north."
- Crikey! We've provoked the flex ribbon cable connectors! Stand back! They seem to be guarding the markings C1113320826DJGHT-A1MOXF... possibly the code for unlocking the pixie dust vault?

Step 16



- Out comes the vibrator motor. It appears that Apple elected to go with the [linear oscillating vibrator](#) that we found in the Verizon iPhone 4 as opposed to the [rotational electric motor with counterweight](#) in the AT&T version.
- ⓘ This vibrator motor is quieter, softer, and all-around less annoying than its counter-weighted predecessor.

Step 17



- A peek at the underside of the home button.
- Legend has it that if you press the home button from this side, your iPhone will actually be sent to the moon (we refrained from testing this theory).
- ⓘ Again, notice the white and red liquid indicator strips.

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Step 18



- *Siri, please stop staring at us like that. Come on, you knew we had to see what was inside; we're curious, ya know?*
- To get Siri to stop staring, we recruit the help of our [plastic spudger](#) to remove the second camera.
- The front-facing VGA camera is good for exactly two things:
 - Communicating via FaceTime
 - Taking self portraits a la Myspace Facebook Google+

Step 19



- We have reached the end of our journey. We are happy to announce that not a single trace of any [Cyberdyne Systems](#) components were found...it seems for the time being our [judgment day](#) is not upon us.
- iPhone 4S Repairability Score: **6 out of 10** (10 is easiest to repair). Very little has changed from the iPhone 4 in terms of repairability.
 - The iPhone 4S is still held together primarily with screws and limited adhesive.
 - The rear panel and battery are both easy to remove and replace (provided you have the correct screwdriver).
 - Apple is again using Pentalobe screws to secure the rear panel and keep people out
 - The LCD and glass -- a carryover from the previous generation -- are fused together, making cracked glass repair more costly.
 - Lots of smaller components are soldered to one ribbon cable, increasing the cost of repairing just one component.