iPhone 8 Teardown

Teardown of the iPhone 8 A1863 performed on Thursday, September 21, 2017 in Sydney, Australia.

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INTRODUCTION

Apple's gone and skipped its iPhone “S" update, so we followed suit and skipped ahead a couple timezones. We're here at Circuitwise headquarters in Sydney, Australia, bringing you the iPhone 8 teardown (and the 8 Plus too!) as early as you can get it. Time to find out if Apple's playing a game of mere numerical catch-up to Samsung’s Galaxy S8 line, or if glass backing and wireless charging warrants skipping ahead a grade. Let’s ~~crack the front and back~~ open it up to see!

Come for the teardowns, stay for the repair goodness! Check us out on Facebook, Twitter, and Instagram to stay up-to-date on all things repair!

TOOLS:

- P2 Pentalobe Screwdriver iPhone (1)
- iOpener (1)
- iSclack (1)
- iFixit Opening Picks set of 6 (1)
- Phillips #000 Screwdriver (1)
- Tri-point Y000 Screwdriver Bit (1)
- Tweezers (1)
- Spudger (1)
- Curved Razor Blade (1)

Step 1 — iPhone 8 Teardown

- The 8 has some slick new tech, but is it enough to warrant the upgraded digit? You be the judge:
  - A11 Bionic chip with embedded M11 motion coprocessor
  - 64 or 256 GB onboard storage capacity
  - 4.7-inch IPS multitouch Retina HD display with 1334 × 750 resolution (326 ppi)
  - 12 MP camera with ƒ/1.8 aperture, optical image stabilization, and 5x digital zoom
  - 7 MP FaceTime HD camera with ƒ/2.2 aperture and 1080p HD recording capability
  - Support for fast-charge and Qi wireless charging
  - 802.11a/b/g/n/ac Wi-Fi w/MIMO + Bluetooth 5.0 + NFC

Step 2


- As we start our tear *downunder* we're greeted by a now-familiar face. Features include:
  - Solid-state home "button" with Touch ID fingerprint sensor.
  - A (still) IPS display similar to the one we found in the iPhone 7 (but now featuring True Tone).
- On the backside, we spy the iPhone's snazzy new glass backing with its seven-layer color finish.
  - Apple assures everyone that this rear panel is reinforced with "an internal laser-welded steel and copper structure," but time and durability tests will tell if this phone will suffer from a snap, crackle, pop—or yet another Bendgate.

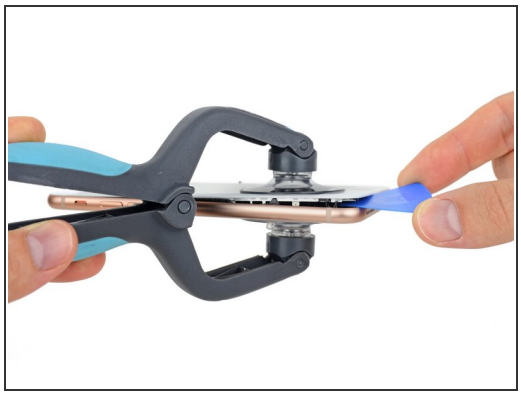
Jury is still out on the model number and the missing wheely-bin symbol.

- Finally, before getting to work, we take a second to line up our new gold iPhone 8 and yesteryear's rose gold 6s. Apple has certainly refined (and re-refined) this design, in addition to stripping a little pink from the finish.

Step 3


- Before we excavate, we X-ray!
  - Our pals at Creative Electron came down under to Circuitwise and snagged some stellar sneak peek imagery.
- The seamless back gives way to some intricate insides. The first thing we spy is the brand new wireless charging coil!
  - More on that later. For now, we put down the X-ray goggles to plan our attack.
- Turns out you don't need X-ray vision to see the model number on this blank-backed phone—it's here on the rosy gold box—A1863!
  - It seems that when Apple set out to clean up the back of the iPhone , it decided to follow all the way through. We're guessing we won't find a cute ID card in the SIM tray , though.

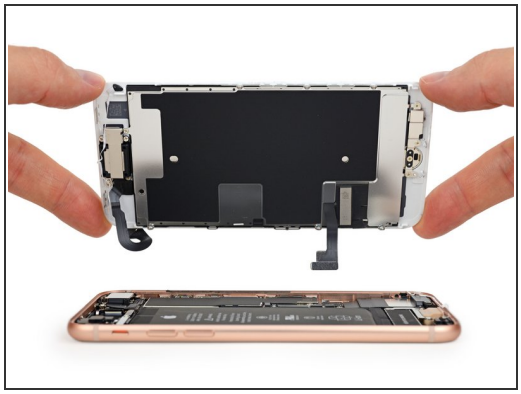
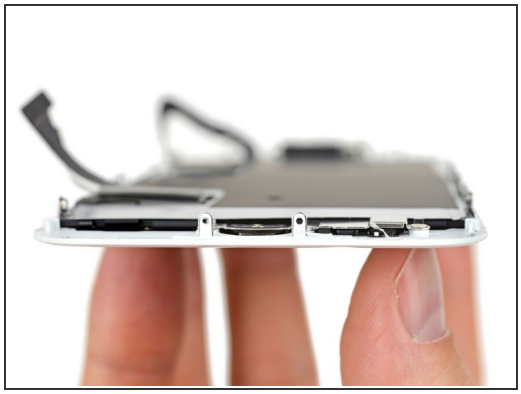
Step 4



- Time to get this teardown underway. After twirling away the pentalobe screws, we need some heat as an antidote to the waterproof display seals.
- iOpener—bam! Seals softened. Next we pull the iSclack out of our tool bag for some pulling power, and slice through the adhesive with a little help from ~~our friends~~ opening picks.

  Do you ever have déjà vu?
- ... and we're in! A first glance reveals nothing new—yet. But we've only just scratched the glassy surface.

Step 5

- As we crack open this ~~book~~ display, we are greeted by the familiar display cable bracket. But instead of the cursed tri-point screws, we're happy to report that we're met with friendly Phillips #000 screws!

  We can't say that we will miss you, tri-points.

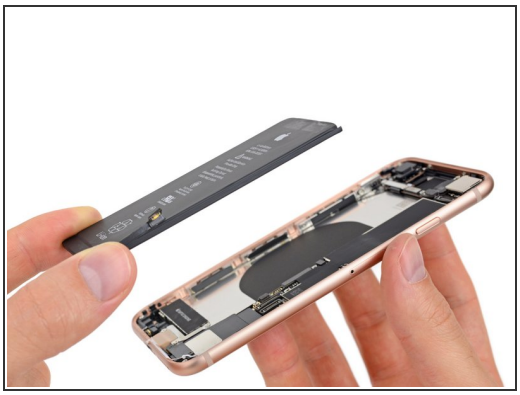
- We quickly decouple a few cables—the battery, display, and home button cables to be exact—and the display is free!

- We note a lack of gaskets on the display's pentalobe tabs, which was previously seen in the iPhone 7.

  However, both the iPhone 7 and iPhone 8 have an IP67 water resistance rating. *How are the floodgates still closed!?*

Step 6





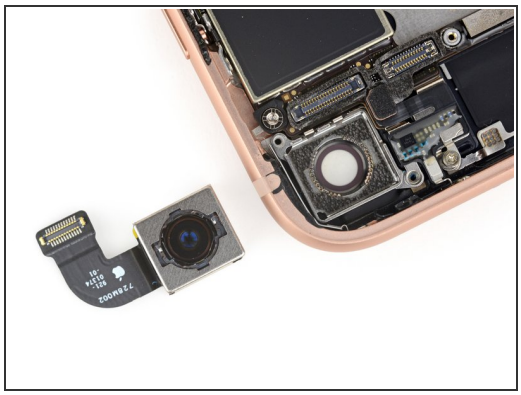
- We make a grab for the battery's stretch-release adhesive strips, and find there are two more of these guys than we're used to.
- But that's okay—we just ask for a hand (or two), and remove all four at once!

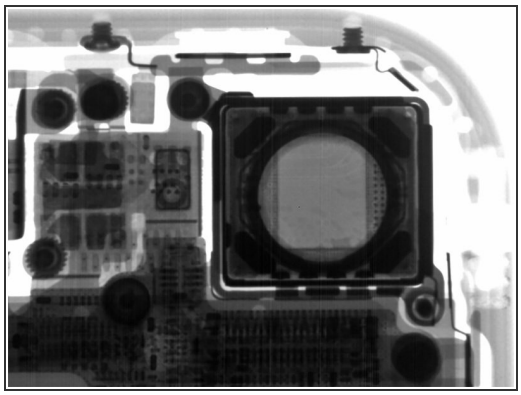
  This procedure requires a wealth of experience, gained in large part due to Stretch Armstrong.
- We easily throw back the ~~mozzarella sticks~~ pull tabs as the battery springs free effortlessly.

Step 7

- Now that this juicy battery pack is out, we can see how it compares to its competitors!
- Fully topped off, this 3.82 V, 1821 mAh cell will deliver up to 6.96 Wh of power.
  - To compare Apples to Apples, the iPhone 7 featured a 7.45 Wh battery.
  - And for reference, the similarly-spec'd Galaxy S8 packs a 11.55 Wh battery.
- Before you get hopping mad about battery news: despite the drop in capacity, Apple claims battery life will be comparable to last year's unit.

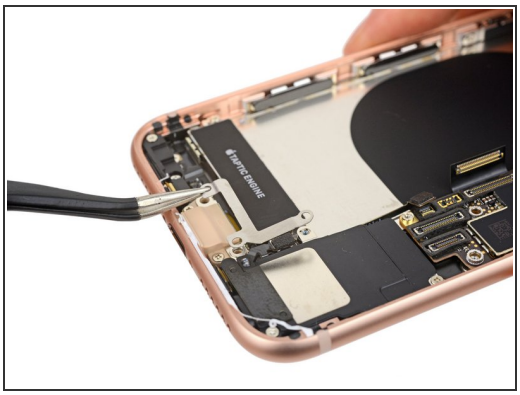
Step 8

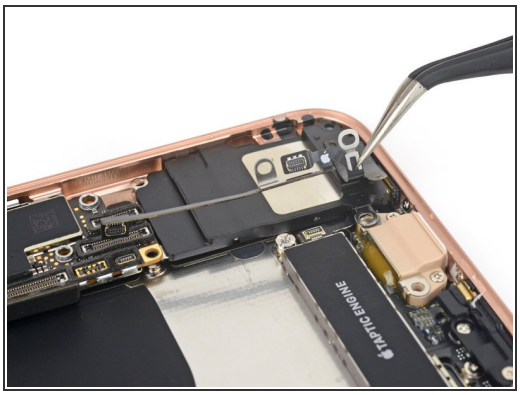


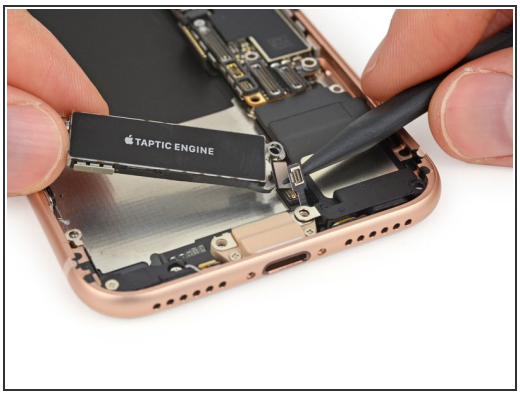


- We pluck the main camera in pursuit of the logic board.
  - The iPhone 8 has the same ƒ/1.8, 6-element lens that we saw on the iPhone 7, but everything else about the camera is new and improved.
  - The 8's sensor is bigger than the 7's, but specs the same 12 MP resolution. This means the individual pixels are larger—letting in more light, improving colors, and decreasing noise.
  - But wait, there's more! Improved image processing software shows Apple still has a few clever tricks up its sleeve.
- We've seen this before, but not with the naked eye! Neat X-rays reveal magnets in the four corners of the camera—giving this camera some advanced vision of its own through OIS.

Step 9





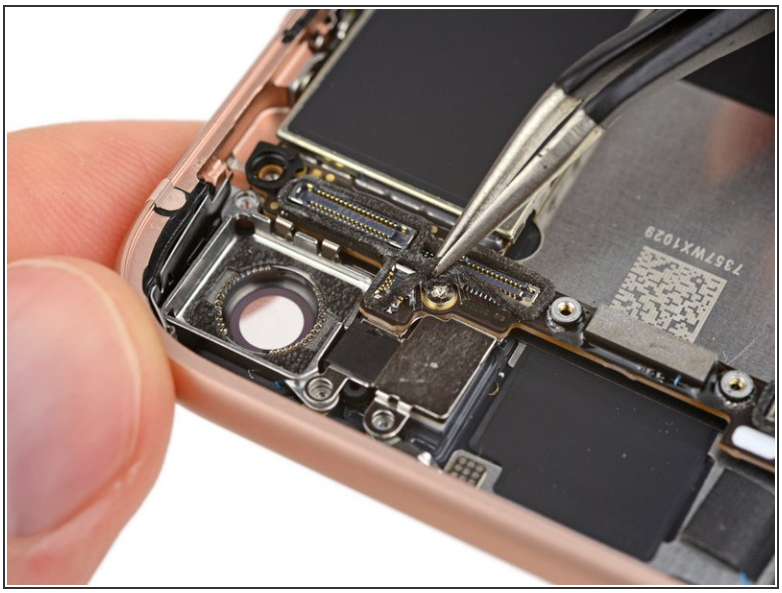


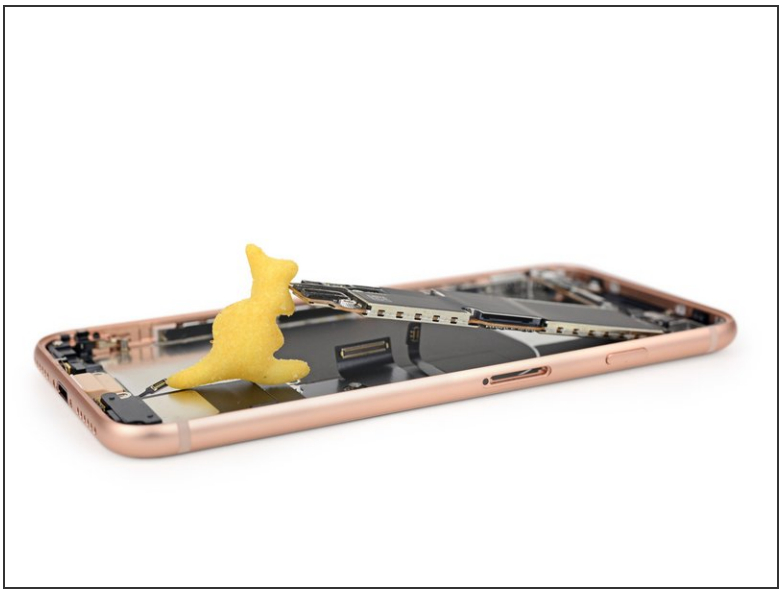
- As our quest continues, we find some quirky cables and brackets!
- First out: a new Lightning port bracket that seems to reinforce the new peach-colored port and trap the Taptic engine.
  - Up to now, we've gleefully plugged along with our Phillips screwdriver—but alas, all good things must come to an end. In removing this bracket, we encountered our first tri-point screw. Still, it's no match for our 64 Bit Driver Kit!

ⓘ We suspect that the newly colored Lightning port could be made of a heat-transferring plastic to allow for safer fast-charging. (Or, it could just be color-matched to the chassis.)

  - Next: a strange interconnect/antenna cable over the speaker.
  - Finally: the Taptic Engine nestled in a series of tiny fiddly connectors.

Step 10

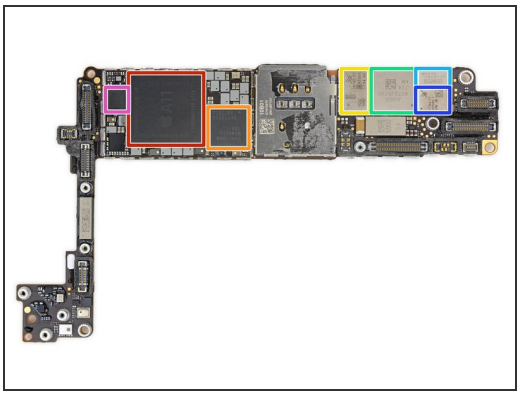


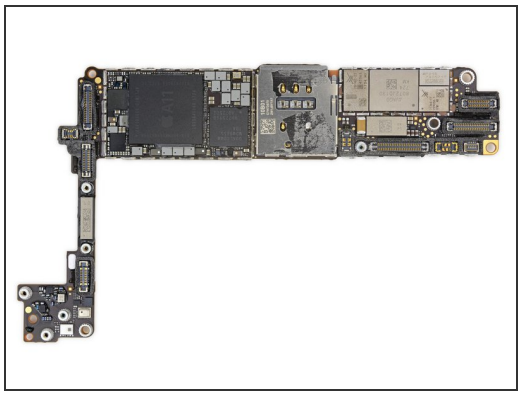


- The final barrier to logic board gold: this tiny hidden screw, which we find trapped under the waterproof silicone seals!
- We get another helping hand in the form of Jumpy's for logic board removal!

Kangaroo-shaped, chicken-flavored snacks aside, we hope you're not jumpy for the iPhone X. Reports say that production could start as late as mid-October—meaning the 8 could be the hardware of choice for early upgraders as well as those in Apple's Upgrade Program.

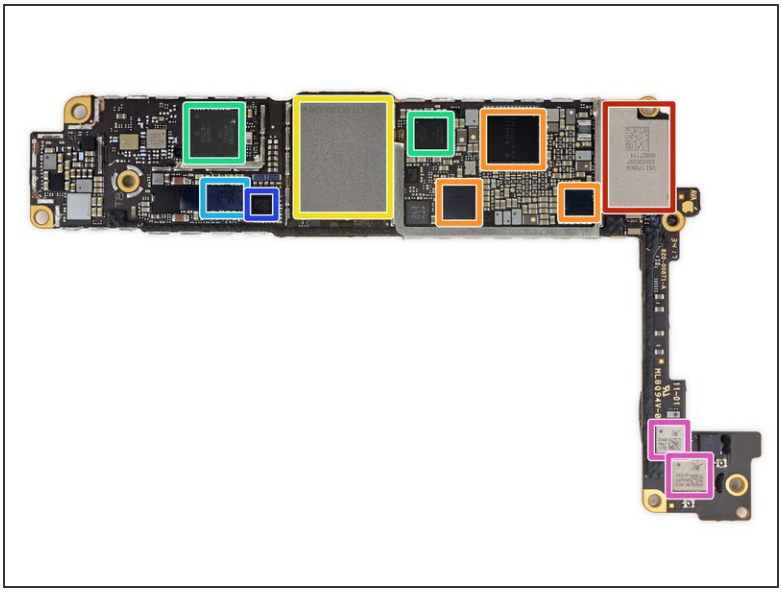
Step 11

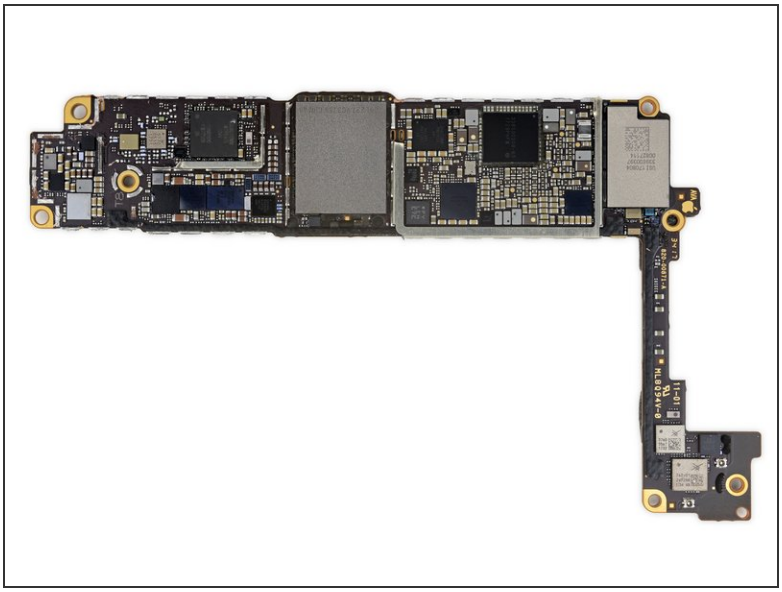




- Drumroll please—it's chip time! Special thanks to the folks at TechInsights for helping scope out this silicon:
  - Apple 339S00434 A11 Bionic SoC layered over SK Hynix H9HKNNNBRMMUUR 2 GB LPDDR4x RAM
  - Qualcomm MDM9655 Snapdragon X16 LTE modem
  - Skyworks SkyOne SKY78140
  - Avago 8072JD130
  - P215 730N71T - likely an envelope tracking IC
  - Skyworks 77366-17 quad-band GSM power amplifier module
  - NXP 80V18 secure NFC module

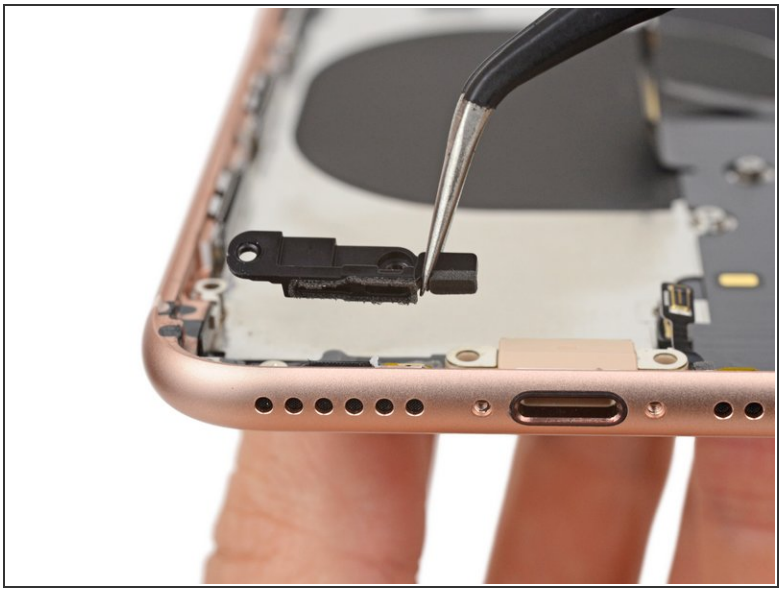
Step 12





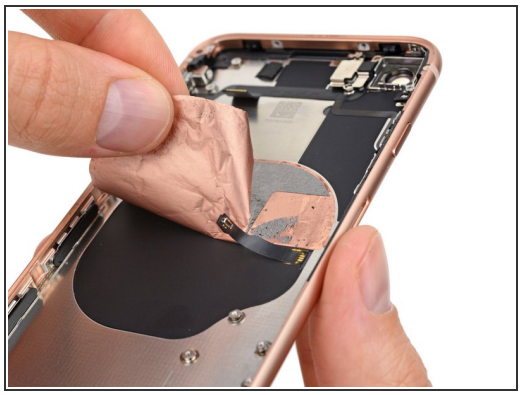
- And on the back side:
  - Apple/USI 170804 339S00397 WiFi/Bluetooth module
  - Apple 338S00248, 338S00309 PMIC, and S3830028
  - Toshiba TSBL227VC3759 64 GB NAND flash storage
  - Qualcomm WTR5975 Gigabit LTE RF transceiver and PMD9655 PMIC
  - Broadcom 59355—Likely an iteration of BCM59350 wireless charging IC
  - NXP 1612A1—Likely an iteration of the 1610 tristar IC
  - Skyworks 3760 3576 1732 RF Switch and SKY762-21 247296 1734 RF Switch

Step 13



- Logic board dispatched, we get down to ~~brass tacks~~ plastic bits. Today's bits feature the speaker and barometric vent.
  - As we learned last year, this barometric vent allows your iPhone to accurately gauge your altitude, while maintaining a watertight seal.
- Another small spec bump: Apple touts that the speakers are 25% louder in the iPhone 8—although there is some debate as to whether it is noticeable.
- The same dozen ~~donut~~ speaker holes line the bottom of this iPhone as the 7.
- We also find familiar signs of waterproofing in the form of seals and little rubber gaskets.

Step 14


- The rear case is looking a little thin on components, but we still find a few pieces that invite inquiry.
- The peach-colored Lightning connector looks like it has changed a li'l since the iPhone 7. Without getting distracted by the desert camo, we notice a new form factor. Better ingress protection, mayhaps?
- We dig through some black tape that covers some copper tape that covers some ~~black tape~~ ... wai a second ...
  - That ain't just black tape, it's the elusive Apple-branded, Qi (pronounced "chee")-enabled wireless charging coil!

ⓘ This coil uses an oscillating magnetic field to generate an alternating current. The alternating current is then converted to direct current—the magic juice that fuels the battery.

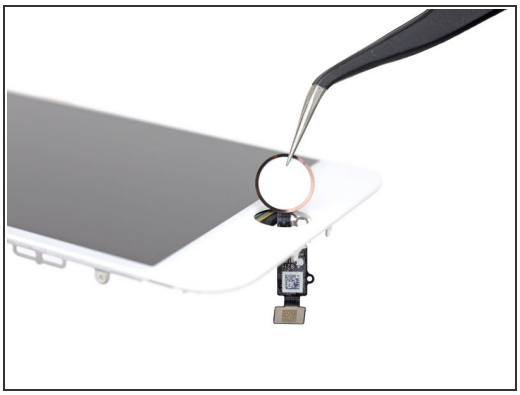
Step 15

- We take a stab at separating the rear glass, but after a lot of heat and wetwork, we've instead shivved our way under the reinforcement panel.
- After more arduous stabbing, we finally get the seven-layer ~~burrito~~ glass sandwich off of the midframe.

  This isn't what we thought Apple meant when they said the glass was stronger.
- The process left the backing plate a bit bent out of shape—we have no idea how Apple plans to do this, but they seem to be keeping the secret squirreled away...
- And no, we didn't let snails figure-skate on the back—that's glue. Lots of it.

  This side-by-side reminds us of something we recently noted.

Step 16



- We finally turn back to the well-known display and pluck the final features away.
  - Goodbye home button.
  - Goodbye front-facing sensor cable.
  - Goodbye LCD shield.
- Oh, but hey li'l chip we can't identify.

Once again, the light sensor is covered by a colored filter, which we believe assists the True Tone system.

Step 17

- That's all she wrote! Well, at least for now—we've got a few more words and photos in store for you in the next few days!
- Thanks heaps to Circuitwise for hosting us at their sweet facility in Sydney. (Seriously, check out that *sweeet* soldering video.)
- And big thanks to the Creative Electron team for providing some serious X-ray support!

Step 18 — Final Thoughts

- The iPhone 8 earns a **6 out of 10** on our repairability scale (10 is the easiest to repair):
  - The two most commonly replaced components, display and battery, remain straightforward to access with the proper knowledge and tools.
  - The addition of wireless charging means less strain on your Lightning port, a common point of failure.

- Water and dust seals complicate repair, but make the need for difficult liquid damage repairs less likely.
- The battery connector once again sports common Phillips/JIS fasteners—but you'll still need up to four different driver types for many repairs.
- The durability of the glass back remains to be seen—but replacements are likely to be very difficult.
- The iPhone's lower components, once readily removed, now lie trapped under a fussy combination of brackets and delicately folded flex cables.