



# iPhone 7 Teardown

Teardown of the iPhone 7 performed on Friday September 16 in Tokyo, Japan.

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## INTRODUCTION

With the [iPhone 7 Plus](#) in pieces, we continue our Tokyo teardown trifecta. Less one camera and with the same number of headphone jacks as the 7 Plus, it is our honor to bring you the iPhone 7 teardown!

With bravery comes responsibility! Fight the good battle and continue the repair journey with us on [Facebook](#), [Instagram](#), or [Twitter](#).

[video: <https://www.youtube.com/watch?v=y1e2J83Vs5A>]



### TOOLS:

- [64 Bit Driver Kit](#) (1)  
*with Y00 tri-point bit*
- [Spudger](#) (1)
- [Tweezers](#) (1)
- [iFixit Opening Picks set of 6](#) (1)
- [iSlack](#) (1)

## Step 1 — iPhone 7 Teardown



- Let's get into this iPhone 7! Before diving in, here are the tech specs:
  - Apple A10 Fusion processor with embedded M10 motion coprocessor
  - 32, 128, or 256 GB onboard storage capacity
  - 4.7-inch IPS multitouch Retina HD display with 1334 × 750 pixels (326 ppi)
  - 12 MP camera with *f*/1.8 aperture, optical image stabilization, and 5x digital zoom
  - 7 MP FaceTime HD camera with *f*/2.2 aperture and 1080p HD recording capability
  - Non-mechanical Touch ID home button driven by new Taptic Engine
  - 802.11a/b/g/n/ac Wi-Fi + MIMO Bluetooth 4.2 + NFC

## Step 2



- As we begin our journey through the iPhone 7, we spot a few new additions on the surface:
  - A 1334-by-750, LED-backlit IPS display with a P3 color gamut and 25% higher brightness than that of the 6s.
  - An  $f/1.8$ , 12 MP camera with built-in optical image stabilization. Apple claims it's 60% faster and 30% more efficient than the previous generation's peeper.
  - A quad-LED True Tone flash that's 50% brighter than the iPhone 6s.
- We also find a new model number—A1779—stamped on the rear case.

## Step 3



- The iPhone 7 shares exact dimensions (138.3 mm × 67.1 mm × 7.1 mm) with its predecessor, the iPhone 6s—but has dropped a little weight, coming in at 138 grams compared to the 143 grams of the iPhone 6s.
  - ⓘ That's a difference of five grams, or about the weight of two American pennies. Is it a big deal? Only if it doesn't cost us in terms of repairability. But that's just our own two cents...
- Also of note, the iPhone 7 does a much better job at disguising those unsightly antenna lines—but not the camera bump. It looks like the mini optical mountain is here to stay.
- While we've been busy admiring this exterior, our friends at [Creative Electron](#) have been staring right through it with some X-rays. Check out those sweet internals.

## Step 4



- In case you haven't heard, matte black is the new black. But if you're into somethin' else, you'll still find the iPhone 7 in gold, rose gold, jet black, or silver.
- ❗ Fair warning: We've heard the jet black finish has more...permanent issues with [scratches](#).

## Step 5



- Peter Piper picked a pair of pesky proprietary Pentalobes...
  - ❗ He's actually a good repair tech!
- With a click and a clack, we break out the iSclack. Without a crack, the iPhone cuts us some slack.
- This iPhone 7 opens just like a storybook, along the side instead of at the top. And with no torn or tight cables, it looks like this story is going to have a fairytale ending.
- But this story is far from over—and before we jump to conclusions, we're going to take this phone cover to cover, starting with the battery.

## Step 6



- After briefly fighting through some sticky adhesives to open the case, we're faced with another set of repair obstacles—teeny tiny [tri-point](#) screws securing the cable bracket, just like in the 7's [big brother, the 7 Plus](#).
- ❗ Worried about where to get such an obscure driver for your iPhone's eventual battery swap? We've got you covered, and have already included it in our [64-bit toolkit](#).
- With the front panel and strings of sticky glue out of the way, we whip out our trusty spudger and disconnect the battery. Next, it's time to set our spudger to the task of popping off display connectors.



## Step 7



- Lights, camera, action!
- The iPhone 7 camera boasts a larger f/1.8 aperture, new 6-element lens and 12 MP sensor, four LEDs, and a flicker sensor that can sense flickering light and compensate for it in your photos and videos.
- ⓘ Now *that's* a flashy camera.
- This camera is ready for paparazzi inside and out—[X-ray images](#) prove this camera looks just as good in a close-up.
- ⓘ It also [looks just like another camera](#) we've seen recently.



## Step 8



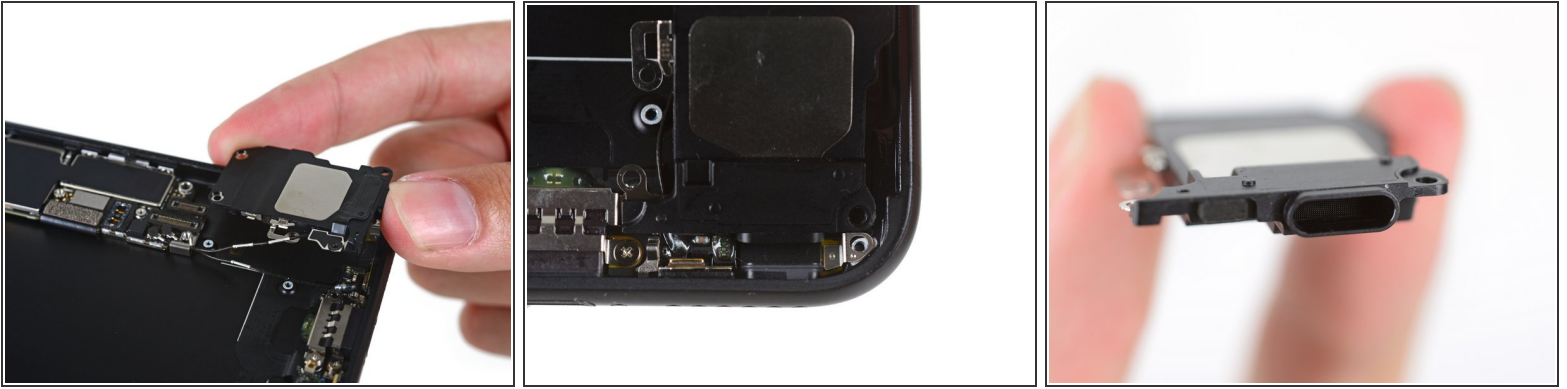
- With the new camera out of the way, we work our way deeper into the 7.
- Next out: the [audio baffle](#) that thinks it's a headphone jack.
- **Teardown Update:** [According to Apple](#), this plastic component is a barometric vent. With the added ingress protection afforded by the watertight seal, the iPhone uses this baffle to equalize the internal and atmospheric pressures in order to have an accurate altimeter.
- This Taptic Engine takes advantage of its extra legroom, sizing up for its home button haptic duties.
- With the path cleared, we use our handy spudger to release the adhesive from beneath the battery. We wind up and peel out the three battery pull tabs.

## Step 9



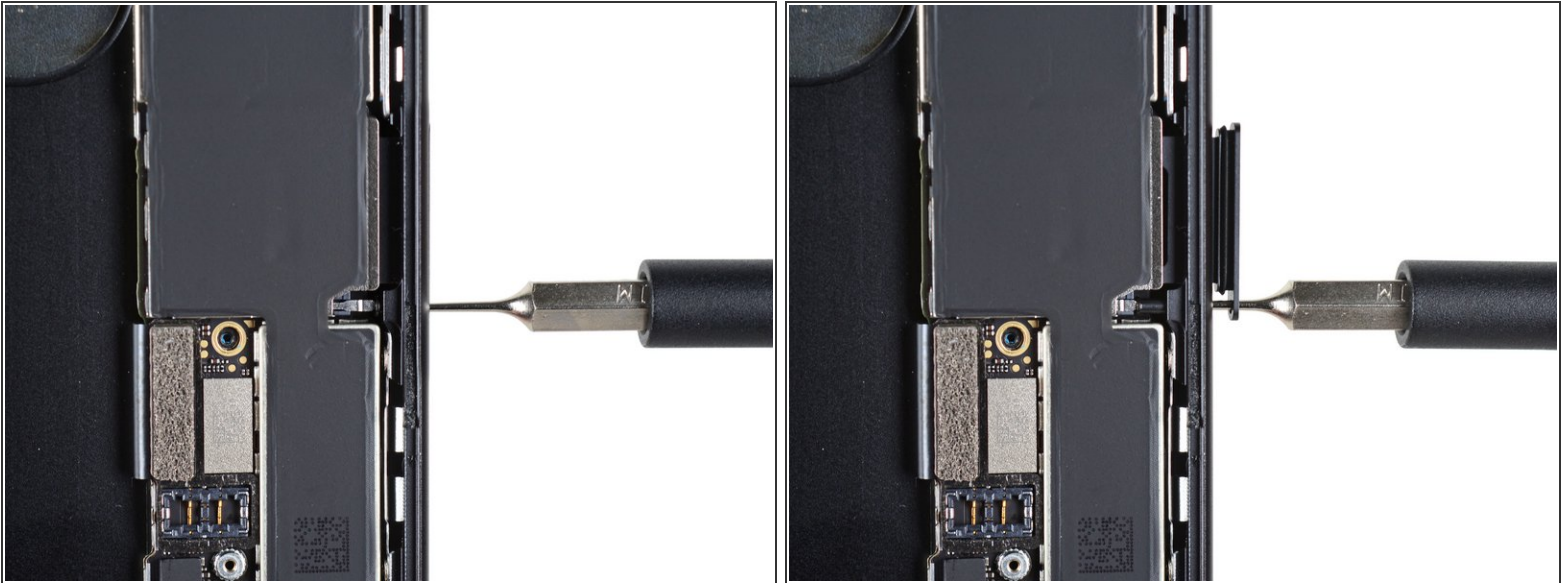
- Finally, we've reached the iPhone 7's power source. What strange energies fuel this dark obelisk? Magic? The offal of a dying star?
- Actually, it's a [relatively benign](#) Lithium-ion battery. This 3.8 V, 1960 mAh battery is rated for a capacity of 7.45 Wh—a notable increase from the 6.55 Wh battery in [last year's model](#).
- Apple claims that this upgraded cell will provide up to 14 hours of 3G talk time, 14 hours of Wi-Fi internet browsing, and 10 days of standby.
- ① While the improved battery life is great, we're more excited about the fact that this battery keeps its replacement-friendly pull tabs—and that it hasn't [blown up](#) on us.

## Step 10



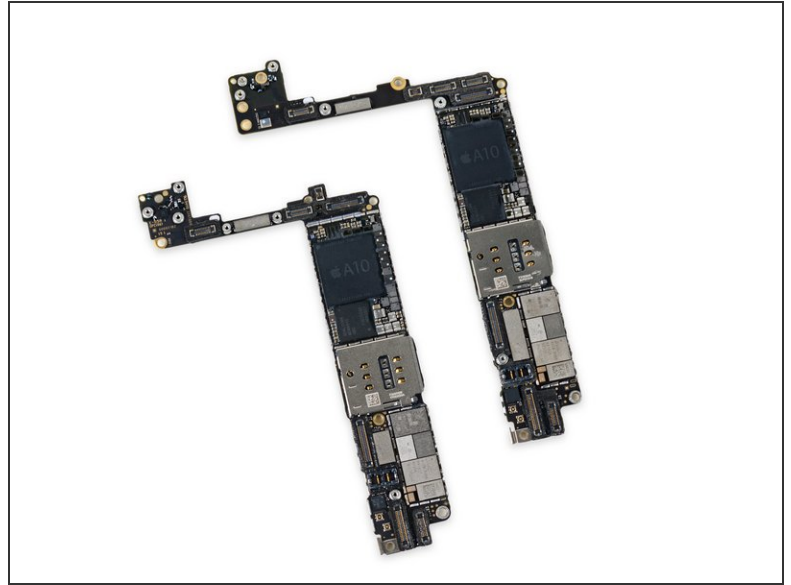
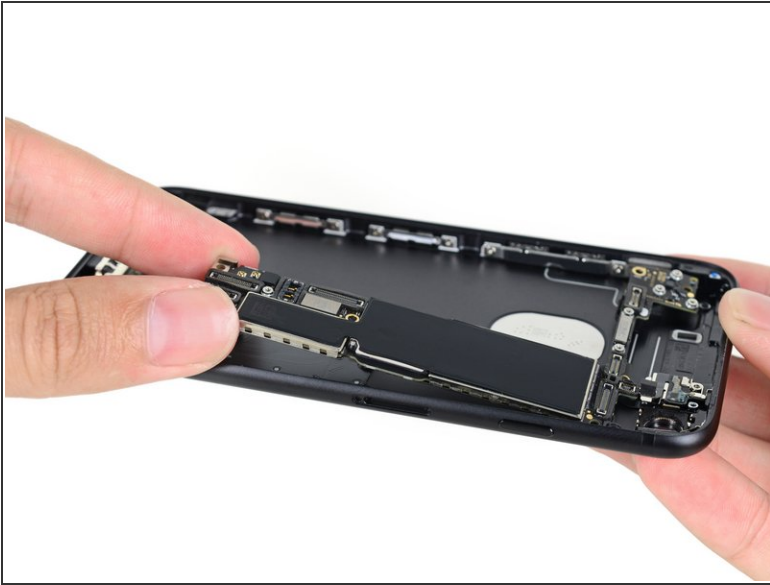
- The iPhone 7 speaker ships with a ~~least~~ stick-on Wi-Fi diversity antenna that connects to the logic board.
- Waterproofing alert! The speaker's output duct fits over a rubber speaker grille gasket for an added layer of ingress protection.
  - This design is nigh identical to the one we unearthed [in the iPhone 7 Plus](#) a couple hours ago.
- The duct *also* has a fine mesh—in case the speaker grille doesn't do its water-blocking job.

## Step 11



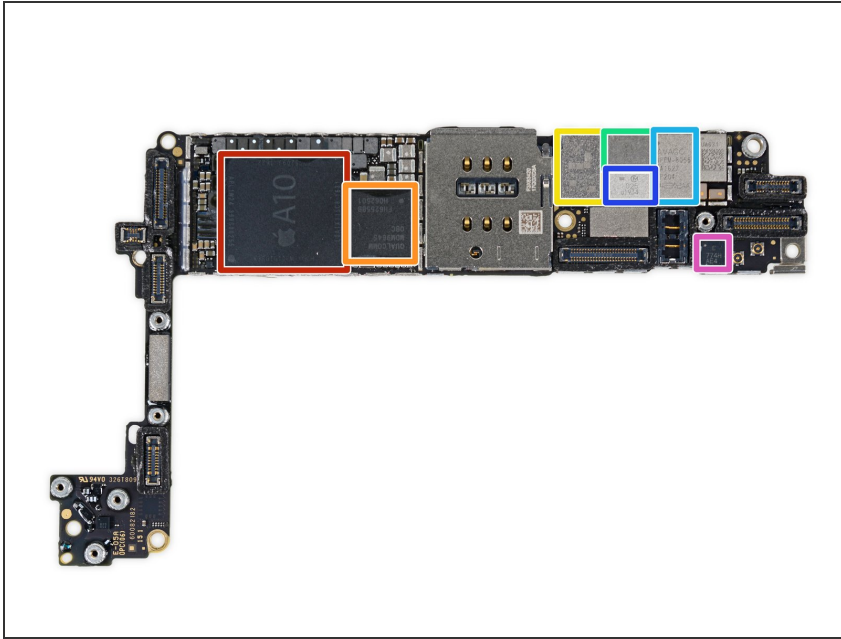
- This seems less like a SIM eject hole and more like a [Rube Goldberg](#) machine. The SIM eject tool pushes on a plastic pin, that pushes a metal pin, which in turn, ejects the SIM tray.
- ...but really it's just one more defense against the inevitable [toilet tumble](#).
- And for extra credit, Apple added a rubber gasket around the SIM tray, too!

## Step 12



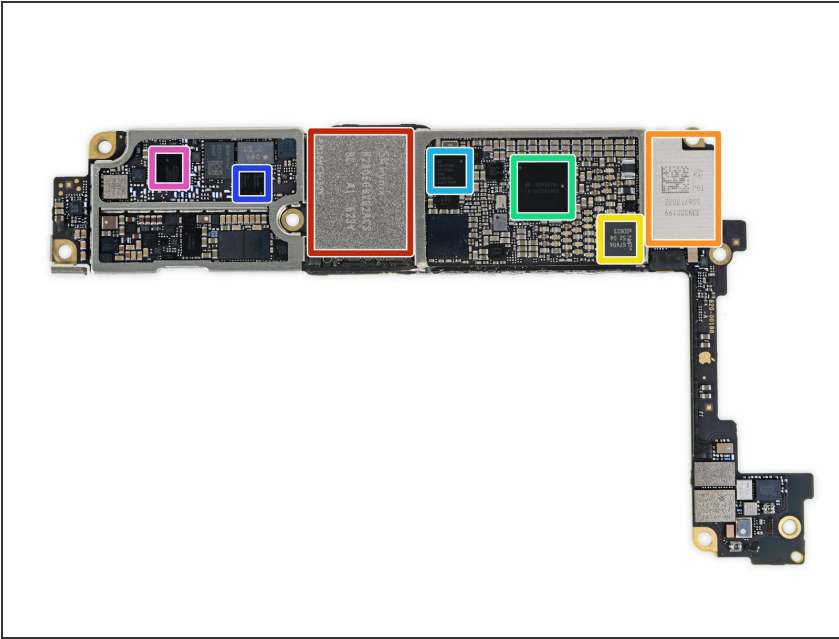
- We quickly remove the logic board to take a closer look at some silicon.
- But not before we do a quick side-by-side comparison with the iPhone 7 Plus logic board. The standard 7 and 7 Plus logic boards are surprisingly similar, despite the noticeable difference in housing size.
- If you look closely, you'll see minor differences in connector sizes and locations, post holes, and screw locations.
- ❗ While it is clear Apple didn't reinvent the wheel here, they did need to make some accommodations for the demands of the iPhone 7 Plus hardware on the board.

## Step 13



- It wouldn't be a teardown without a ton of silicon! Here's what we uncover on the logic board:
  - Apple A10 Fusion APL1W24 SoC + Samsung 2 GB LPDDR4 RAM (as denoted by the markings K3RG1G10CM-YGCH)
  - Qualcomm [MDM9645M](#) LTE Cat. 12 Modem
  - Skyworks SKY78100-20 Power Amplifier Module
  - Avago AFEM-8065 Power Amplifier Module
  - Avago AFEM-8055 Power Amplifier Module
  - Murata 025 Antenna Switch Module (likely)
  - Invensense Accelerometer

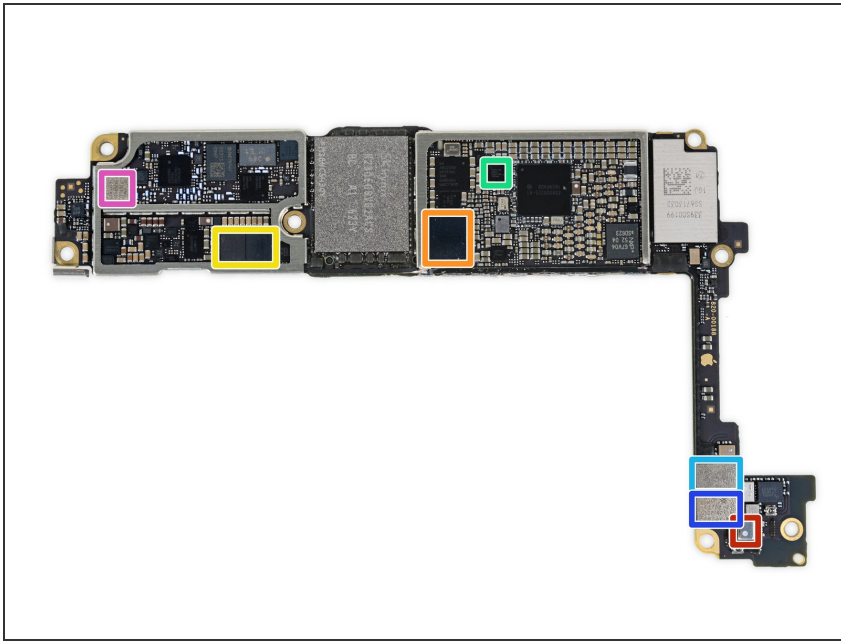
## Step 14



- And on the flip side:
  - SK Hynix [H23QEG8VG2ACS](#) 32 GB Flash
  - Murata 339S00199 Wi-Fi/Bluetooth Module
  - NXP PN67V NFC Controller w/ Secure Element
  - Apple/Dialog Semiconductor 338S00225 Power Management IC
  - Qualcomm PMD9645 Power Management IC
  - Qualcomm [WTR4905](#) Multimode LTE Transceiver
  - Qualcomm [WTR3925](#) RF Transceiver

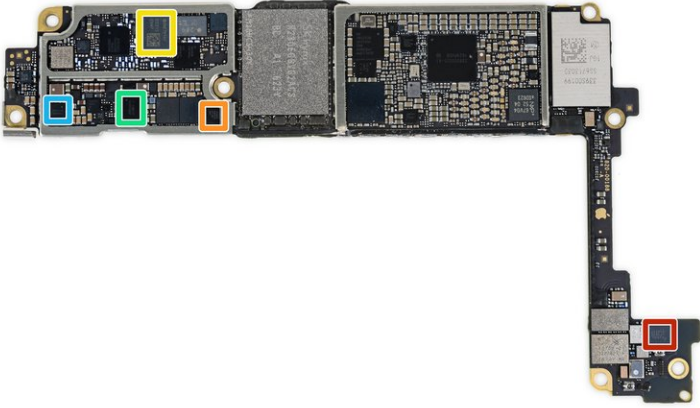


## Step 15



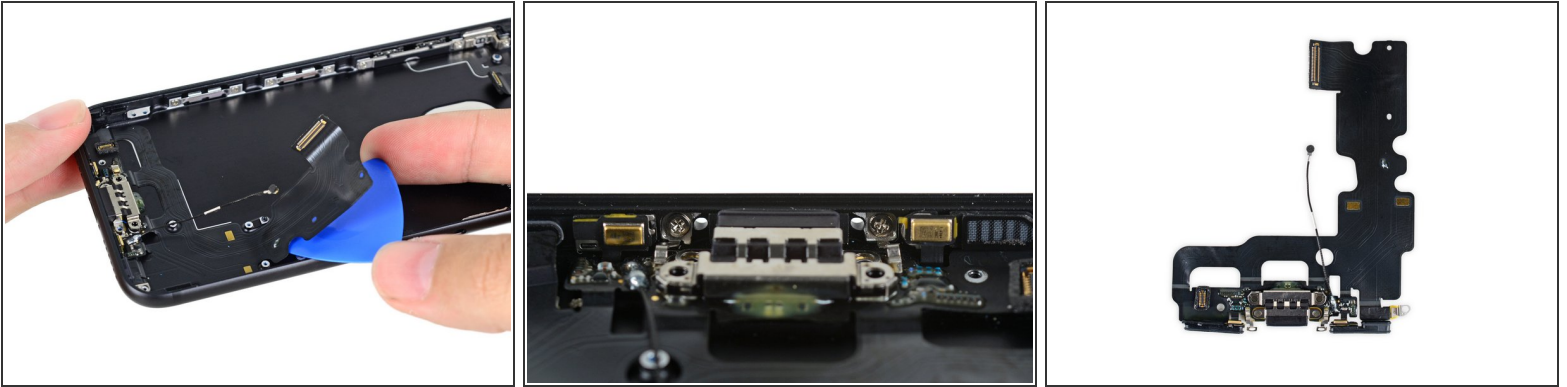
- Even more chips:
  - Bosch Sensortec [BMP280](#) Barometric Pressure Sensor
  - Apple/Cirrus Logic 338S00105 Audio Codec
  - Cirrus Logic 338S00220 Audio Amplifier (x2)
  - Lattice Semiconductor [ICE5LP4K](#) iCE40 FPGA
  - Skyworks SKY13702-20 Diversity Receive Module
  - Skyworks SKY13703-21 Diversity Receive Module
  - Skyworks SKY77363-11 Power Amplifier (likely)

## Step 16



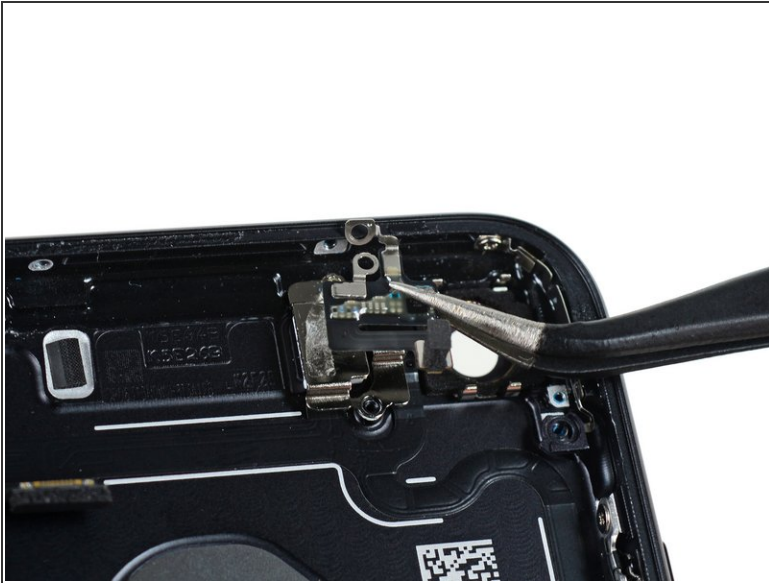
- Just a few ICs remain:
  - Avago LFI626 200157 (likely an antenna tuner)
  - NXP Semiconductor CBTL1610A3 Display Port Multiplexer (likely)
  - TDK EPCOS D5315 Antenna Switch Module (likely)
  - Texas Instruments SN2400AB0 Battery Charger IC (likely)
  - Texas Instruments TPS65730A0P Power Management IC
  - Texas Instruments SN61200 DC-DC Converter (likely)
- We'd like to extend a hearty thanks to Chipworks for their IC identification expertise. Head on over to [their teardown page](#) for an in-depth analysis of the iPhone 7 control hardware.

## Step 17



- Now that the logic board is out, we're free to pick out the Lightning connector assembly.
- Or can we!? Prying up the light adhesive went well, but our first tug was in vain. There are some extra screws in this port!
- It seems like Apple has taken our [warning](#) to heart. Without a headphone jack to bear the burden of audio connections, this port will get a lot more wear, and it's been well reinforced.
- Other denizens of the Lightning cable (a.k.a. the "everything cable"): an antenna, two microphones, two speaker grille plugs, and oh yeah...the Lightning port.

## Step 18



- Scraping the bottom of the barrel phone case, we snag an antenna flex cable.
- Also, a spidery mess of button cables. They're thin and fragile and tricky to remove intact, but they also snuggle up to a lot of waterproofed components. So hopefully this dangly assembly you see here won't be coming out all that often.

## Step 19



- With the rear case nearly stripped, we turn our attention to the volume buttons that gave us some trouble in the 7 Plus.
  - Our persistent tugging with some tweezers rewards us with a broken retaining flap, but this button cover still won't come quietly.
  - Next out is this weird c-clip looking thing.
  - And the button *finally* comes off! With two tiny gaskets! Apple is serious about this waterproofing business.
- i** This three-part mechanism is much more difficult to disassemble than the button covers we are used to seeing in iDevices, but hopefully the seal it provides means this removal procedure will be needed less frequently.

## Step 20



- Returning to the display assembly, we still have several updated bits of tech to investigate.
- After some peeling, we free the earpiece speaker and an all-new 7 MP FaceTime HD camera with deep trench isolation and auto image stabilization.
  - ⓘ This is quite the upgrade from the 5MP [FaceTime camera](#) in the 6s.
- The earpiece speaker is no slouch either, having been upgraded to serve as a second loudspeaker for legit stereo sound.
- We also pluck out the solid state mini touch sensor—er, home "button."

## Step 21



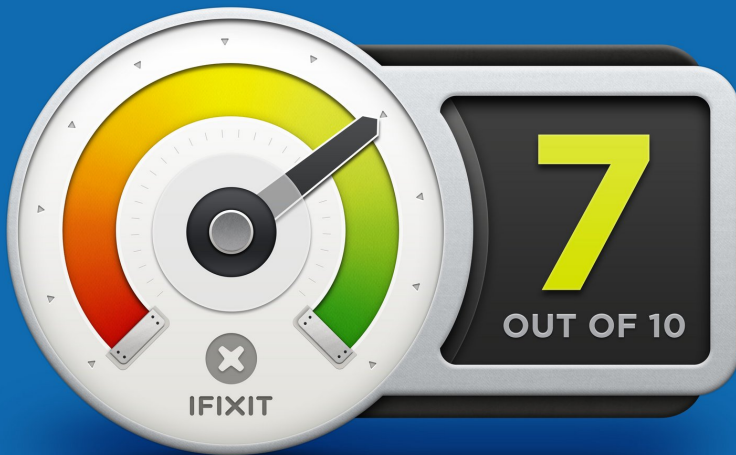
**NIKKEI TECHNOLOGY**  
Tech & Industry Analysis from Japan/Asia *online*

- That's a wrap folks! Well, an *unwrap*.
  - ① Thanks for sticking with us for this marathon of a teardown session! If you missed the [iPhone 7 Plus](#) or [Apple Watch Series 2](#) teardowns, check 'em out.
- Thanks once again to our gracious hosts in Tokyo, Nikkei Technology! 皆さん、おやすみなさい ! Good night, everyone!



## Step 22 — Final Thoughts

### REPAIRABILITY SCORE:



- The iPhone 7 earns a **7 out of 10** on our repairability scale (10 is the easiest to repair):
  - The battery is straightforward to access. Removing it requires specialty screwdrivers and knowledge of the adhesive removal technique, but is not difficult.
  - The solid state home button eliminates a common point of failure.
  - Improved water and dust protection greatly reduces the need for repairs associated with environmental damage and accidental spills (but also makes some repairs more difficult).
  - The display assembly continues to be the first component out, simplifying screen repairs, but the procedure has grown more complicated with improved waterproofing measures.
- With the addition of tri-point screws, many iPhone 7 repairs will require up to four different types of drivers.