



iPhone 6 Plus Teardown

iPhone 6 Plus Teardown on September 18, 2014.

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INTRODUCTION

Over the years, we've seen the iPhone evolve—and grow. It began as just the iPhone. Soon it learned how to 3G, it gained an S (it would lose and gain this every other year), and it even learned to read fingerprints. Years of hard work and dedication have made the iPhone into what it is today, the iPhone 6 Plus. Join us live as we explore this gargantuan iPhone 6 Plus.

Oh, were you looking for the normal-sized iPhone 6 teardown? [We've got that, too.](#)

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[video: https://www.youtube.com/watch?v=65yYqoX_1As]

TOOLS:

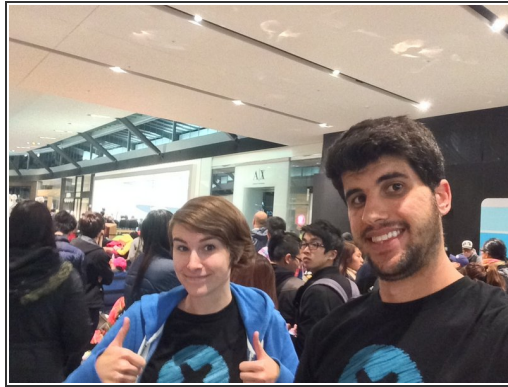
- [iSlack](#) (1)
 - [Precision Tweezers Set](#) (1)
 - [Jimmy](#) (1)
 - [iFixit Opening Tools](#) (1)
 - [Spudger](#) (1)
 - [64 Bit Driver Kit](#) (1)
-

Step 1 — iPhone 6 Plus Teardown




- Ladies and gentlemen, the time is nigh. Today, we stand among a select few in the shadow of a colossus, the iPhone 6 Plus. But what makes this enormous phone special? We're glad you asked:
 - Apple A8 processor with 64-bit architecture
 - M8 second-generation motion coprocessor
 - 16, 64, or 128 GB onboard storage capacity
 - 5.5-inch 1920x1080 pixels (401 ppi) Retina HD display
 - 8 MP iSight camera (with 1.5 μ pixels, phase-detection autofocus, and optical image stabilization) and a 1.2 MP FaceTime camera
 - Touch ID home button fingerprint sensor, barometer, 3-axis gyro, accelerometer, ambient light sensor
 - 802.11a/b/g/n/ac Wi-Fi + Bluetooth 4.0 + NFC + 20-band LTE

Step 2



News flash from the Land Down Under:

- The line was already 50 people strong yesterday around 1 PM local Aussie time.
- By 7 AM there were close to a thousand people in line.
- Our teardown team was #53 in line, and the Apple Store [only had](#) 40 iPhone 6 Plus models in stock.
- But hey, no worries—we got our hands on an iPhone 6 Plus, all thanks to a wonderful Australian iFixit fan named [Ricky](#). Thanks Ricky!
-  It turns out Ricky is not related to this [Ricky](#).
- After our little Apple Store adventure, we skedaddled back to [MacFixit Australia](#), where the teardown's taking place. We want to send out a big thanks to our good friends at MacFixit for letting us use their office. They stock Mac and iPhone upgrades/accessories, and also carry our iFixit toolkits. Thanks MacFixit Australia!

Step 3



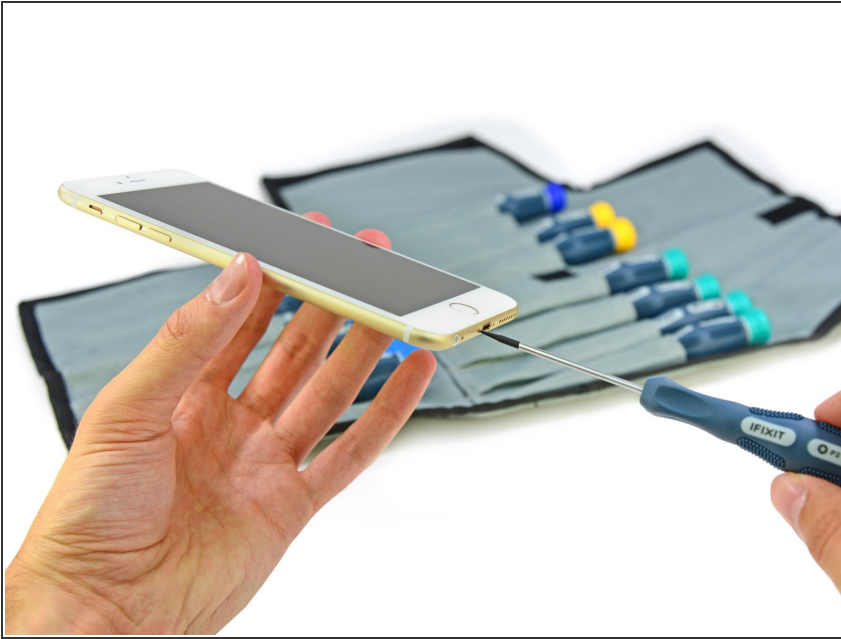
- Coming soon to a supermarket near you, the iPhone 6 Plus Pop-Tarts Bluetooth/NFC speaker.
- The iPhone 6 Plus measures in at 158.1 mm long, 77.8 mm wide, and 7.1 mm thick. Quite literally [bigger than a Pop-Tart](#).
- ⓘ At 7.1 mm, it's the thicker of the new crop of iPhones—but thickness is the one dimension in which it undercuts [last year's iPhone 5s](#), which measured 7.6 mm.

Step 4



- Just like the iPhone 5s, the iPhone 6 Plus is available in three different [colors](#): Silver, Gold, and Space Gray. Of course we went for the Gold.
- The iPhone 6 Plus is identified by its model number: A1524.
- Much to the [distress](#) of some reviewers, both iPhone 6 models feature a noticable camera "bump". It seems that Apple was unable to shave enough thickness off of the camera sensor to keep it flush with the rest of the chassis. The lens cover may be made out of sapphire glass, but we're still concerned about what this design choice might mean for durability.
- Much like the [HTC One M8](#), the iPhone 6 Plus features two plastic antenna stripes on the outer case. These stripes help with wireless reception that would otherwise be blocked by an all-metal outer case.

Step 5



- It seems Apple is reluctant to switch from Pentalobe screws to good ol' regular Phillips screws. Luckily, we brought our Pro Tech Screwdriver Set to remove those pesky Pentalobe screws.
- ⓘ While proprietary screws are not our favorite, we are happy that we don't have to go straight to heat.

Step 6



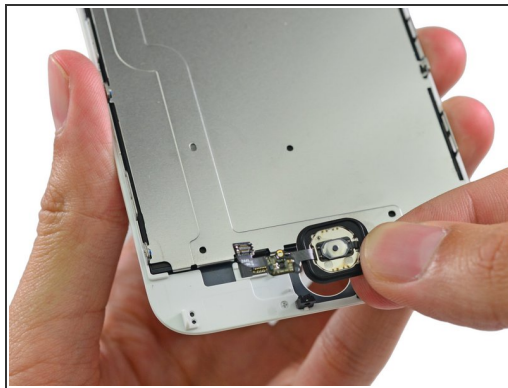
- It's [iSlack time](#)! This handy tool allows us to easily shuck the display assembly from the rear enclosure.
- ☑ We proceed cautiously, remembering the [surprise](#) from last time.
- With no noticeable booby traps, we proceed to open our little gold treasure chest.
- ⓘ Apple's rerouting of the Touch ID sensor cable recalls the cleaner design (and safer opening procedure) of the iPhone 5—the iPhone with the [highest repairability score](#) to date.
- Much like iPhones of the past, the display assembly cables are held securely to the logic board by a metal bracket.

Step 7



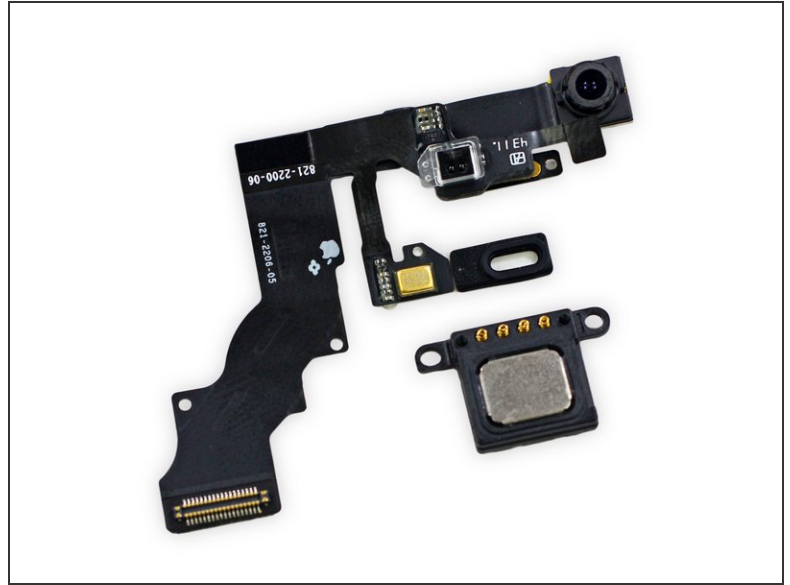
- With the display assembly removed, we get our first look at the innards of the iPhone 6 Plus.
- ① The internal layout of the iPhone 6 Plus appears to be similar to the 5s, but we immediately notice the sheer size of the battery. Based on its volume alone, we suspect the iPhone 6 Plus will be no slouch when it comes to battery life.

Step 8



- The home button assembly is secured by a metal bracket. Removing the bracket allows us to simply pop the home button off the front panel assembly.
- This design is on-par with [last year's home button](#)—modular, if a bit time-consuming to get to in the event of a repair.

Step 9



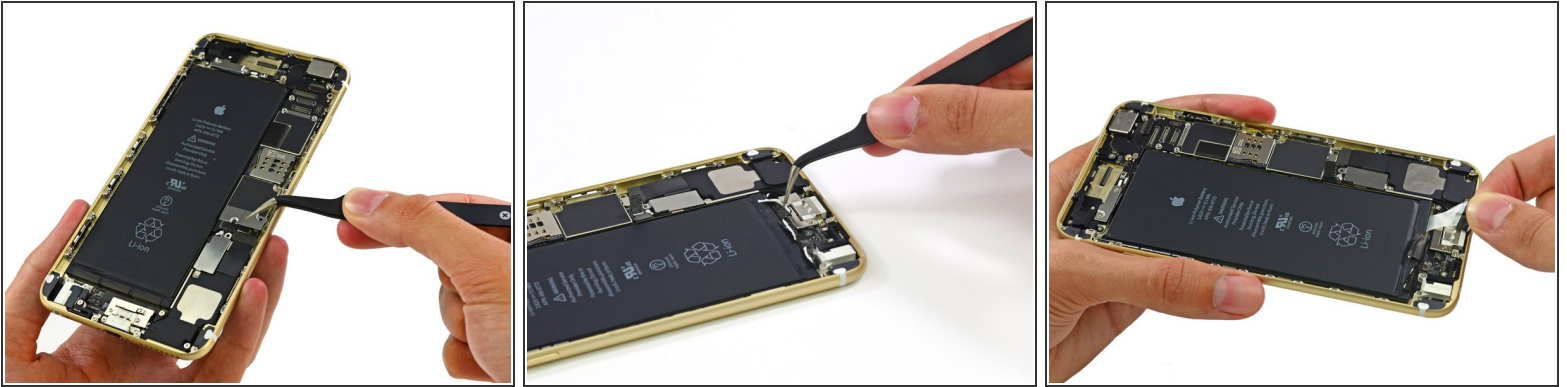
- The front-facing camera is part of a larger cable assembly, which includes the earpiece speaker, microphone, and ambient light sensor. Both reside on the front panel assembly.

Step 10



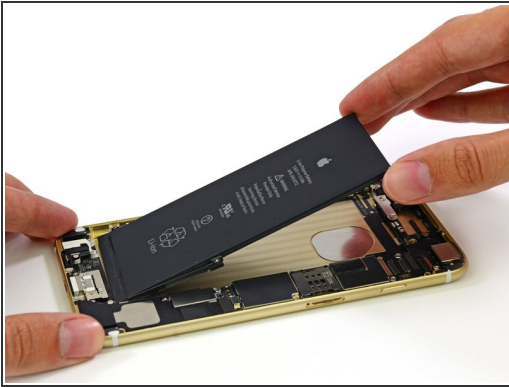
- Next we decide to remove the metal plate from the front panel assembly.
 - In a big win for repairability, Apple has completely redesigned how the home button connects to the main board. Gone is the [awkwardly short and fragile cable](#) of the iPhone 5s days. Instead, Apple has made the effort to run the home button cable all the way to the opposite end of the phone. We're quite happy to see this improvement!
- i** We can't think of a reason to extend the cable this way except to improve repairability. Thank you, Apple.

Step 11



- The next logical step is to remove the battery from the iPhone 6 Plus.
- The battery connector is covered by a metal bracket, which we dispose of using our metal tweezers.
- ⓘ Near the bottom of the battery, we locate some sticky pull tabs.
- Here's what we know about sticky iPhone battery pull tabs: pull it right, and it is super easy; pull it wrong, and it is the end of the world.
- This adhesive is similar to a 3M Command adhesive, and when you pull the tab correctly it shears the entire strip off.

Step 12



- After saying the magic words, the 43-gram, 4.7" x 1.9" x 0.13" battery mystically lifts off the rear case enclosure.
- ⓘ In line with rumors, the battery is rated at 3.82 V and 11.1 Wh of energy, for a total of 2915 mAh—nearly double the capacity of the 1560 mAh unit in the iPhone 5s, and slightly larger than the 2800 mAh burner in the Galaxy S5.
- Between the [larger battery](#) and improvements in power efficiency, Apple touts a talk time of up to 24 hours on 3G, and 384 hours of standby time.
- The battery found in the Plus is larger than the standard iPhone 6's 6.91 Wh, 1810 mAh battery—which explains the [longer life](#), despite the much larger screen.

Step 13



- This is new! We have something new! The vibrator assembly is located to the right of the battery, below the logic board.
- Do you remember [Jimmy](#)? Of course you do. Everyone remembers Jimmy. With the help of Jimmy, we pry open the vibrator assembly.
- Thanks Jimmy! Inside we find a delicate array of copper coils. They create alternating magnetic fields that shake a permanent magnet mass, which rides on a couple of springs.

Step 14



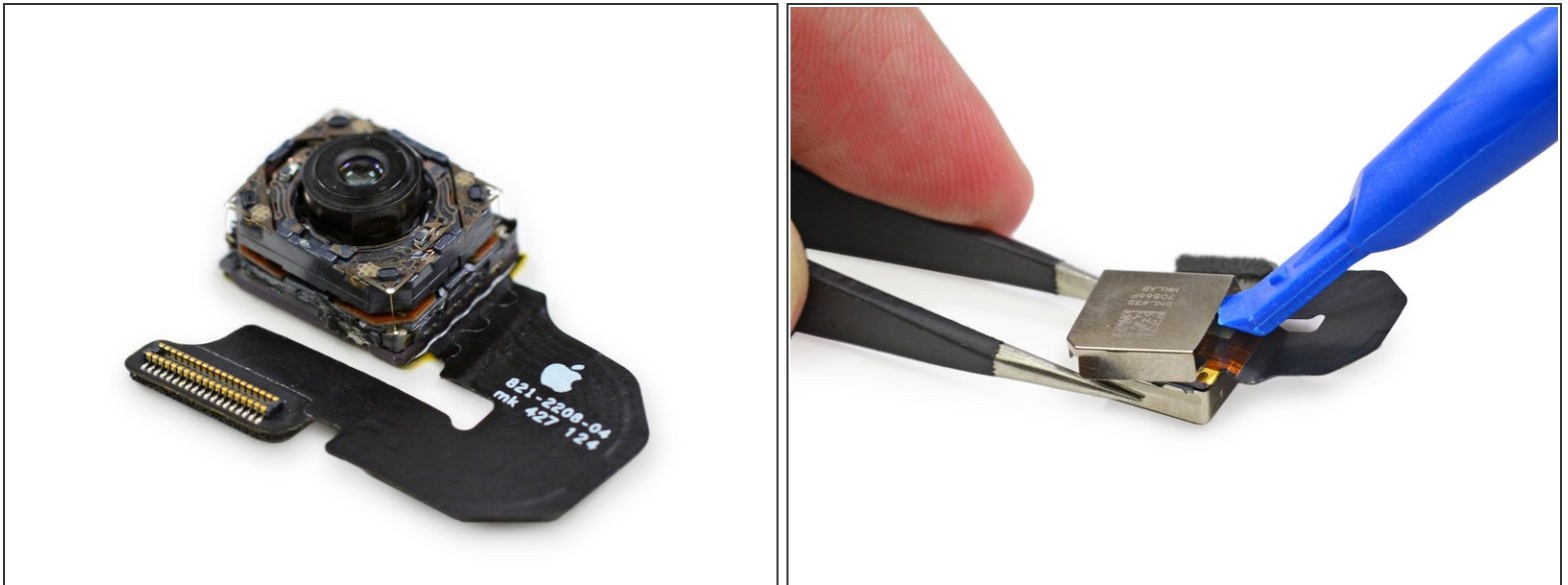
- The rear-facing camera is easily dispatched with a pair of tweezers.
- The back of the iSight camera is labeled DNL432 70566F MKLAB.
- Just like the iPhone 5s, the 6 Plus features an 8 MP (with 1.5 μ pixels) $f/2.2$ aperture rear-facing camera. The 6 Plus brings two new additions to the table: optical image stabilization, and "[Focus Pixel](#)" phase-detection autofocus.
- ❗ Phase-detection autofocus has been around for [awhile](#) in DSLRs, but is relatively new to smartphones. However, the iPhone 6 and 6 Plus aren't the first to feature it — the Samsung Galaxy S5 had it [first](#).

Step 15



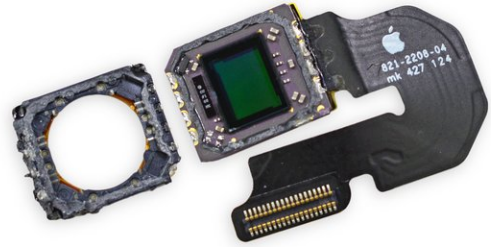
- Such wiggles. Much wiggles.

Step 16



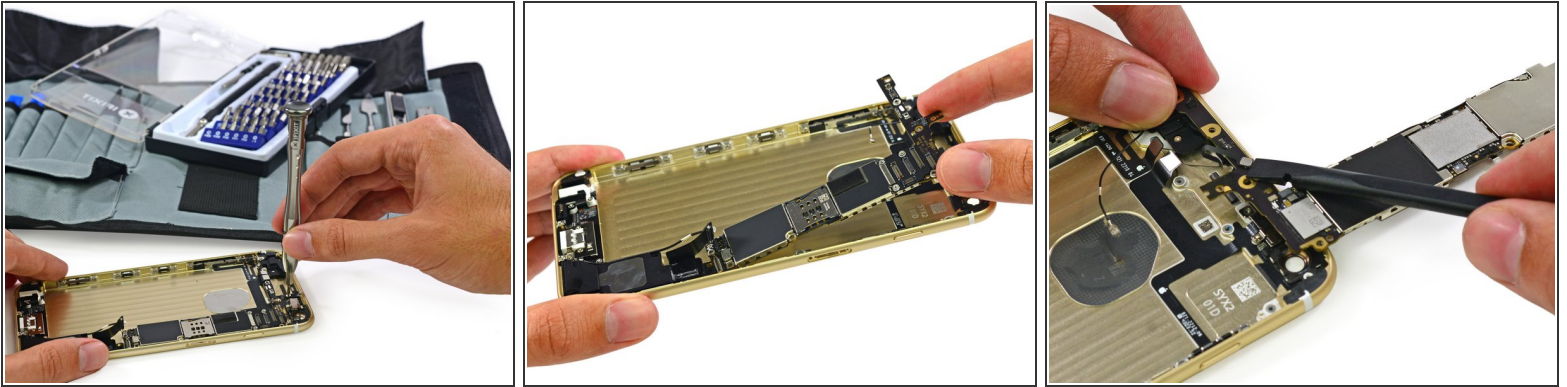
- Apple loves to focus on their cameras, touting the iPhone as the world's most popular camera in their Keynote. So what's behind the lens? Let's take a peek...
- Using a plastic opening tool and some steady fingers, we remove the camera housing.
- While it may not look like much here, the updates found in the iPhone 6 Plus's camera (along with the increased storage) have [piqued the interest of amateur and indie filmmakers](#). We just hope this camera is ready for its closeup...

Step 17



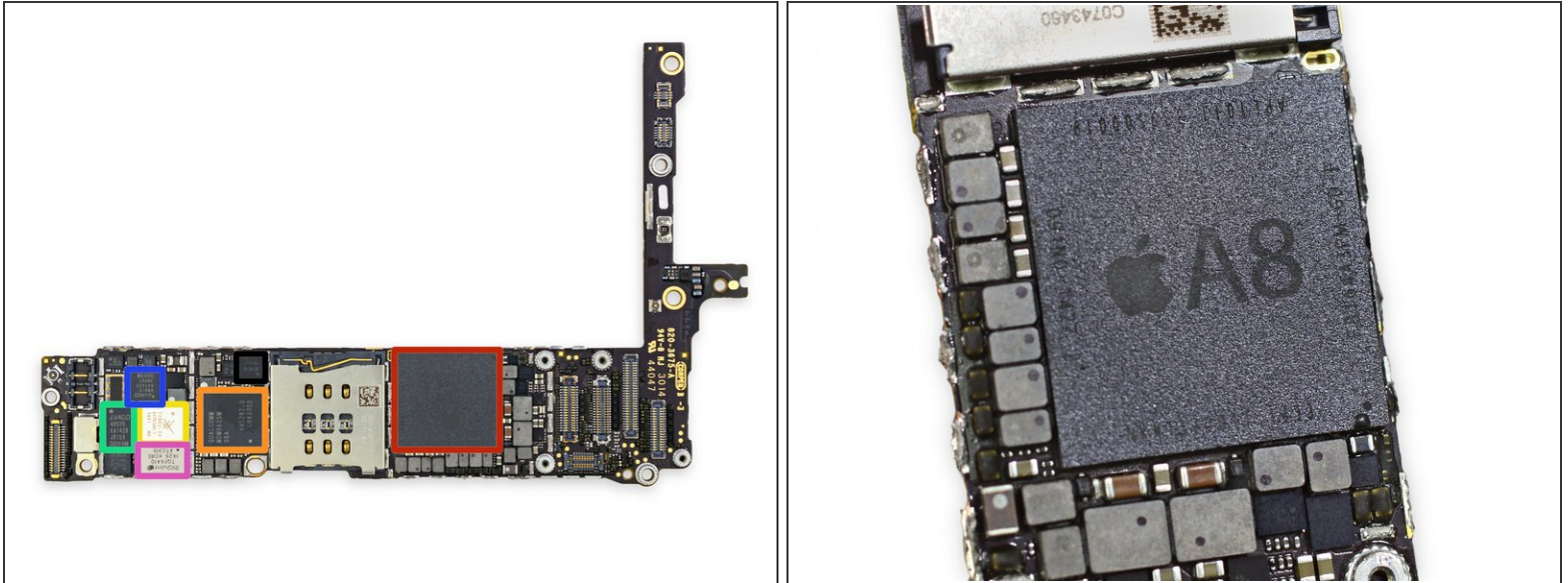
- A deeper look at the inside of the rear-facing camera reveals just what we expect: a small lens.
- Beneath the lens we see the camera's sensor.
- The key feature differentiating this camera from that of the standard iPhone 6 is **optical image stabilization**—a technology we've [seen before](#). The lens element on the left is nested into a tiny metal cage, nudged to and fro by the [electromagnetic coils](#) surrounding the sensor on the right.
- Constant readings from the gyroscope and the M8 motion coprocessor give the iPhone 6 Plus detailed data on the movements of your shaky human hands, allowing it to compensate by rapidly moving the lens assembly. Result: sharper, clearer photos, even in low-light environments.

Step 18



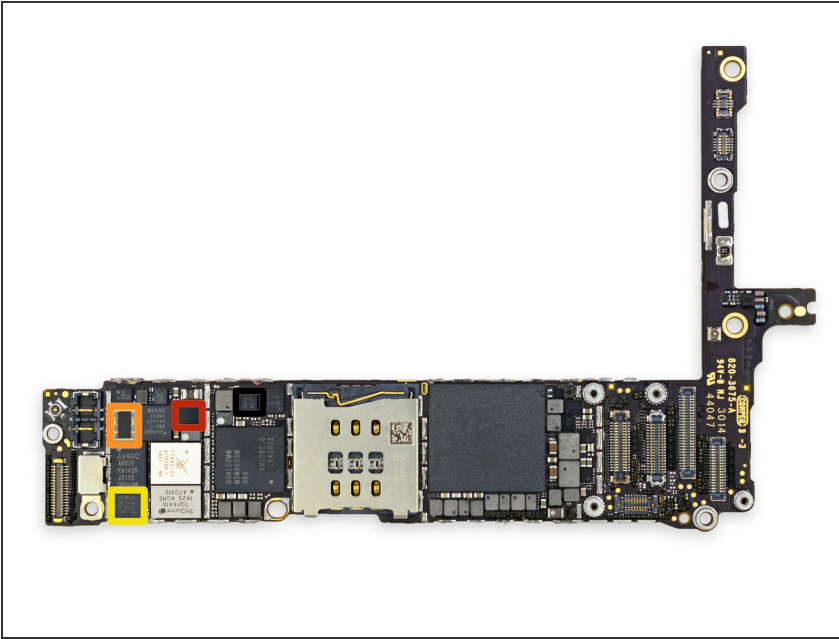
- It's about time we remove the logic board, secured tightly to the rear case enclosure by a few screws.
- But before we finish, we're reminded to spudger away an antenna connector from the back of the logic board.

Step 19



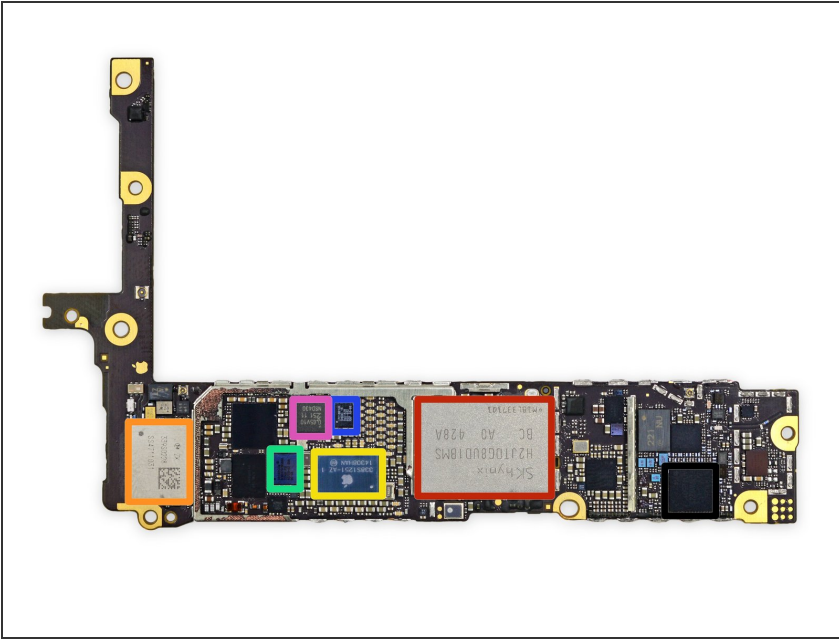
- Let's identify some ICs on the front side of the logic board:
 - Apple A8 [APL1011](#) SoC + Elpida 1 GB LPDDR3 RAM (as denoted by the markings EDF8164A3PM-GD-F)
 - Qualcomm [MDM9625M](#) LTE Modem
 - Skyworks [77802-23](#) Low Band LTE PAD
 - Avago [ACPM-8020](#) High Band PAD
 - Avago [ACPM-8010](#) Ultra High Band PA + FBARs
 - TriQuint [TQF6410](#) 3G EDGE Power Amplifier Module
 - InvenSense [MP67B](#) 6-axis Gyroscope and Accelerometer Combo

Step 20



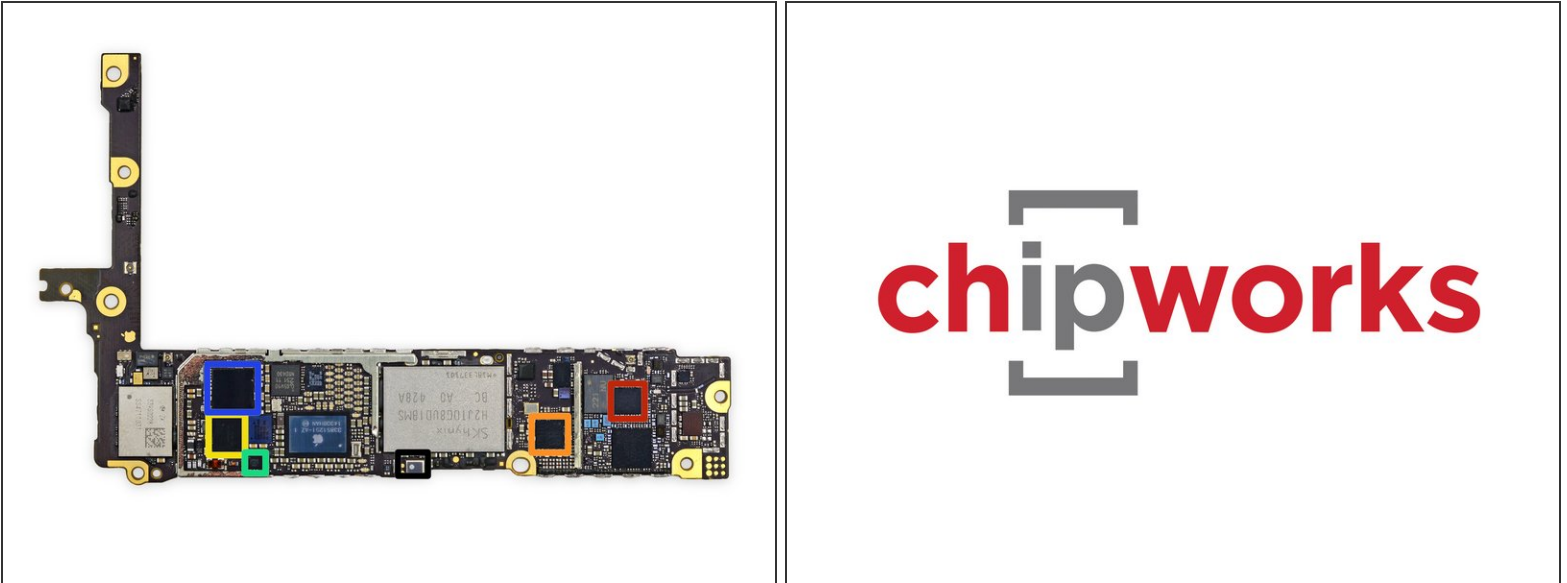
- More ICs on the front of the logic board:
 - Qualcomm [QFE1100](#) Envelope Tracking IC
 - RF Micro Devices [RF5159](#) Antenna Switch Module
 - Skyworks [SKY77356-8](#) Mid Band PAD
- Bosch Sensortec [BMA280](#) 3-Axis Accelerometer

Step 21



- Back of the logic board.
- SK Hynix [H2JTDG8UD1BMS](#) 128 Gb (16 GB) NAND Flash
- Murata [339S0228](#) Wi-Fi Module
- Apple/Dialog [338S1251-AZ](#) Power Management IC
- Broadcom [BCM5976](#) Touchscreen Controller
- NXP [LPC18B1UK](#) ARM Cortex-M3 Microcontroller (also known as the M8 motion coprocessor)
- NXP [65V10](#) NFC module + Secure Element (likely contains an NXP [PN544](#) NFC controller inside)
- Qualcomm [WTR1625L](#) RF Transceiver

Step 22



- More ICs on the back of the logic board:
 - Qualcomm [WFR1620](#) receive-only companion chip. Qualcomm [states](#) that the WFR1620 is "required for implementation of carrier aggregation with WTR1625L."
 - Qualcomm [PM8019](#) Power Management IC
 - Texas Instruments [343S0694](#) Touch Transmitter
 - AMS [AS3923](#) NFC Booster IC
 - Cirrus Logic [338S1201](#) Audio Codec
 - Bosch Sensortec [BMP280](#)

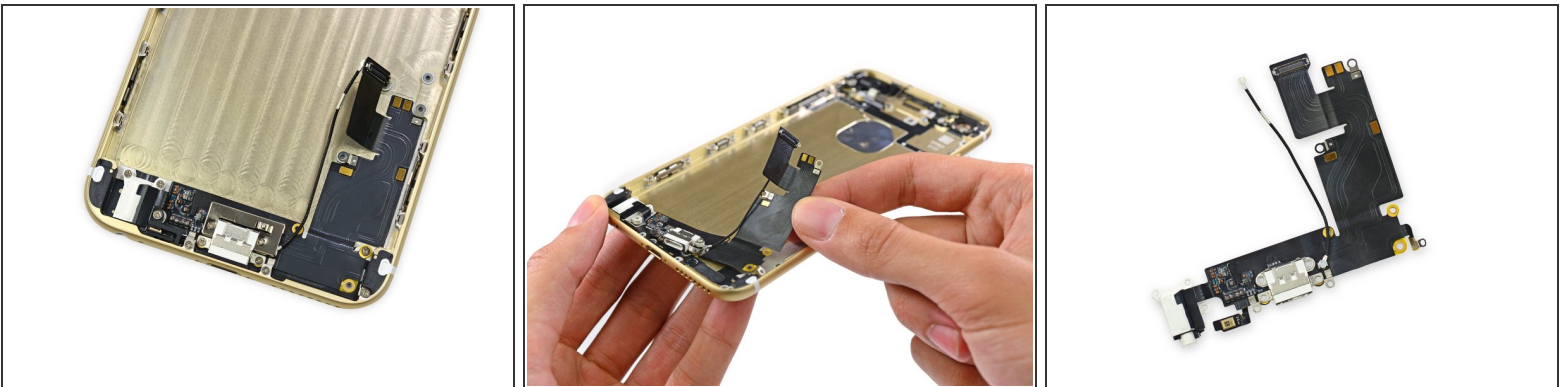
👉 A big and hearty mega-thanks to our pals at [Chipworks](#) for helping us ID all of this tech. We definitely couldn't have done it without them!

Step 23



- The iPhone 6 Plus's solitary speaker comes out next.
- The modularity of the speaker design is appreciated, even if its markings are inscrutable. The manufacturing origins of this speaker remain shrouded in secrecy, for now.

Step 24



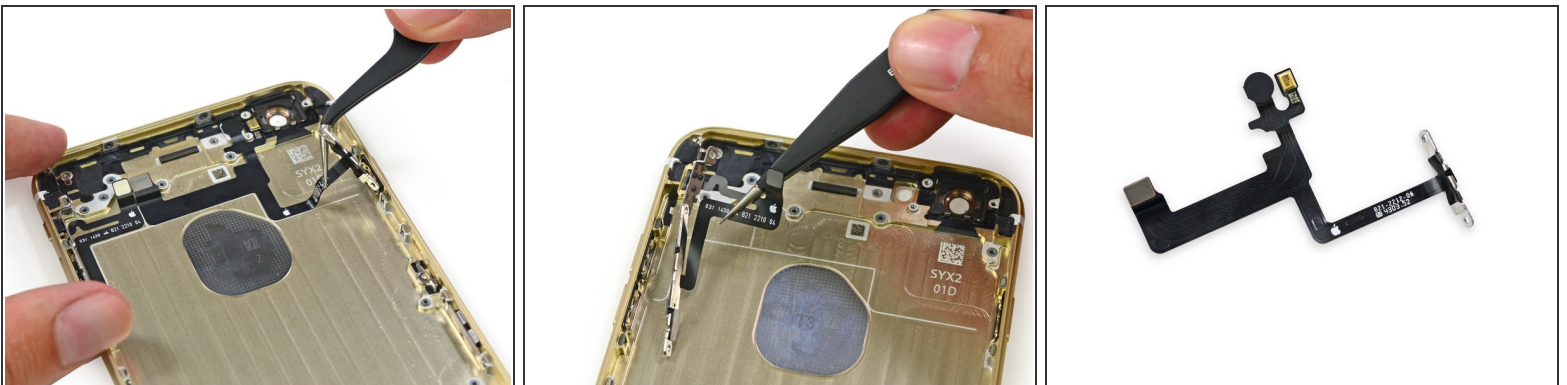
- The Lightning connector assembly is comprised of the headphone jack, Lightning connector, and a few antenna connectors.
- ① Cable packages like this are great in terms of space-saving, but not-so-great when your headphone jack decides it doesn't like being pulled on every day.

Step 25



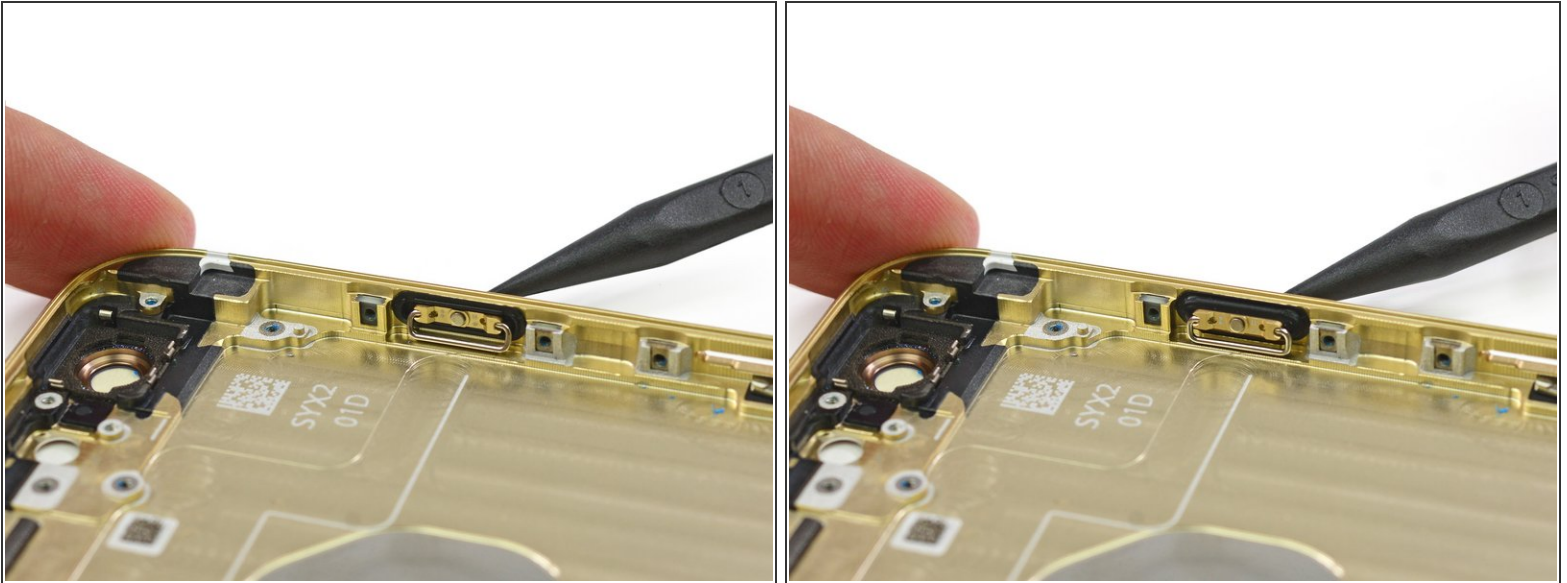
- We turn our focus to the top of the rear case enclosure, where a plethora of antennas await. These antennas prove to be no match for our trusty tweezers though.

Step 26



- As we near the end of the teardown, we come across both the power button ribbon cable assembly and the volume button ribbon cable assembly.
- Both assemblies consist of tiny components strung on thin, fragile cables like twinkle lights.

Step 27

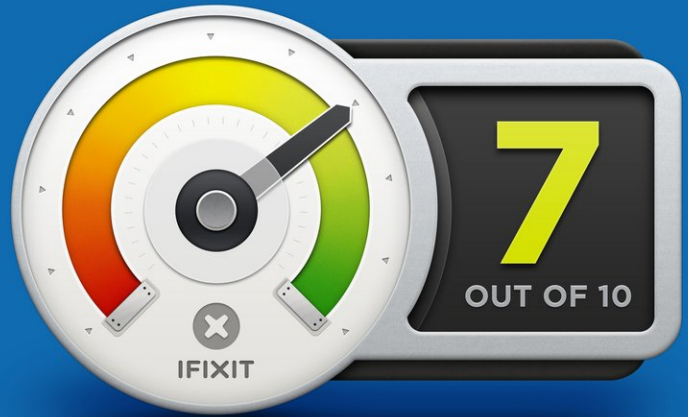


- We're button-pushers around here, so we took particular interest in this fancy new rubber gasket surrounding the power button.
- Similar gaskets surround the volume buttons. Altogether, this seems to represent a move toward increased water/dust resistance, and therefore improved durability.

Step 28



REPAIRABILITY SCORE:



- We have slain the giant. The iPhone 6 Plus earned a respectable seven out of ten, an improvement over the iPhone 5s. Here's why:
- Continuing the trend from the iPhone 5 series, the display assembly comes out of the phone first, simplifying screen repairs.
- The battery is straightforward to access. Removing it requires a proprietary pentalobe screwdriver and knowledge of the adhesive removal technique, but is not difficult.
- The fingerprint sensor cable has been re-routed, fixing a significant repairability issue with the iPhone 5s and making the phone much safer to open. (On the 5s, the cable is easily torn if a user is not careful while opening the phone.)
- The iPhone 6 Plus still uses proprietary Pentalobe screws on the exterior, requiring a specialty screwdriver to remove.
- Apple does not share repair information for the iPhone 6 Plus with independent repair shops or consumers.