



iPhone 11 Teardown

An iFixit teardown of the iPhone 11. No pro, no max, but still plenty to learn!

Written By: Sam Goldheart



INTRODUCTION

For the first time ever, Apple unleashed three new iPhones all at once, making this officially our busiest teardown day ever. We focused most of our efforts on the [iPhone 11 Pro Max Teardown](#), but of course we couldn't resist looking inside the mid-sized, non-professional iPhone 11. Time for one more teardown!

For more teardowns, behind-the-scenes content, and the latest and greatest in repair news, be sure to follow us on [Instagram](#), [Twitter](#), or [Facebook](#), sign up for our [newsletter](#), and/or check out our [YouTube channel](#).



TOOLS:

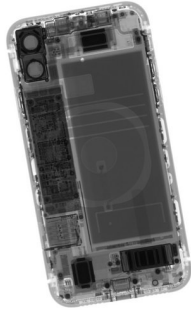
- [P2 Pentalobe Screwdriver iPhone](#) (1)
 - [iFixit Opening Picks set of 6](#) (1)
 - [iSlack](#) (1)
 - [Tri-point Y000 Screwdriver Bit](#) (1)
 - [Standoff Screwdriver for iPhones](#) (1)
 - [Spudger](#) (1)
 - [Tweezers](#) (1)
 - [Hot Air Rework Station Hakko FR-810](#) (1)
 - [Phillips #00 Screwdriver](#) (1)
-

Step 1 — iPhone 11 Teardown



- This minty green machine may be the middle sibling in this year's iPhone lineup, but it's no less worthy of time under the screwdriver.
- As usual, the specs tell part of the story, and hopefully a teardown will tell the rest. Here's what we know going in:
 - A13 Bionic SoC with a third-generation Neural Engine
 - 6.1-inch (1792 x 828) 326 ppi Liquid Retina LCD with True Tone and P3 wide color gamut support
 - Not one, but two 12 MP rear cameras (wide and ultra-wide), and a 12 MP selfie camera paired with TrueDepth Face ID hardware
 - 64 GB of onboard storage (128 GB or 256 GB optional)
 - Gigabit-class LTE, Wi-Fi 6, Bluetooth 5.0, NFC
 - IP68 rating

Step 2



- There may not be any "X" in this iPhone's name anymore, but luckily the X-rays still shoot straight through it, giving us a sneak peak at what's ahead.
 - Big thanks to [Creative Electron](#) for always accompanying us on our teardown adventures so we never get lost.
 - ❗ And that's not all the X-rays are good for—they make great [wallpapers](#) too, just sayin'.
- On the inside, we spy a rectangular battery, a long double-stacked logic board (note the little holes—vias—around the board), and the absence of a [second battery connector](#) and accompanying mystery board. In short, it's looking a bit like an iPhone XR with some XS tech folded in.

Step 3



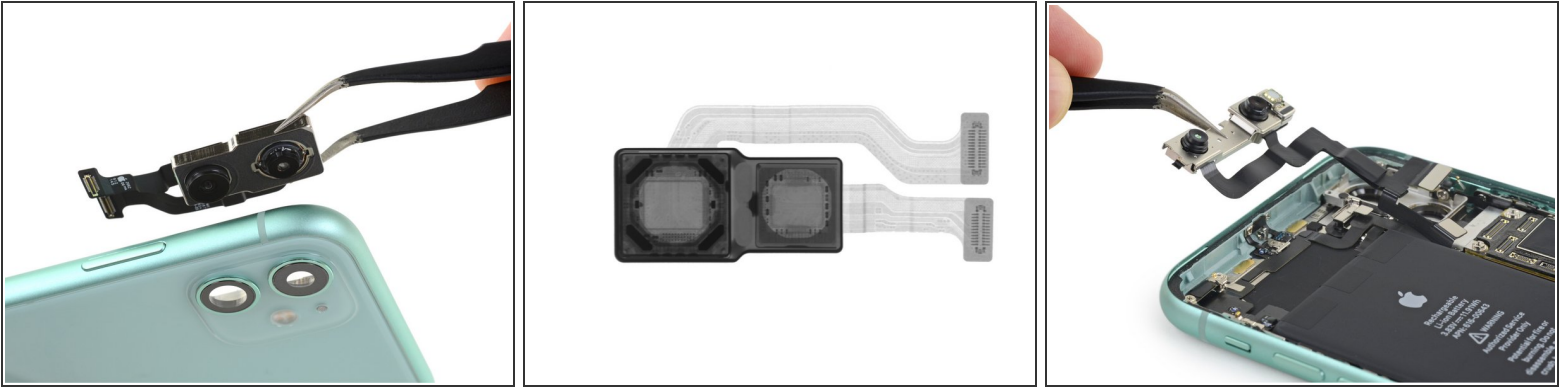
- Back on the outside, the vanilla 11 casts off the “iPhone” labeling present on its predecessor, the iPhone XR, sporting only a centered mark of the Apple.
- i Once thought to be indicative of the [fabled bilateral charging](#) feature, this lonely Apple logo mocks all those who dare place their drained AirPods here looking for a charge.
- Meanwhile, the XR's camera module seems to have undergone some photographic mitosis. The 11's new dual cameras are couched in a raised squircle that inadvertently set off a gold rush of memage. [Surprised baby owl](#), anyone?

Step 4



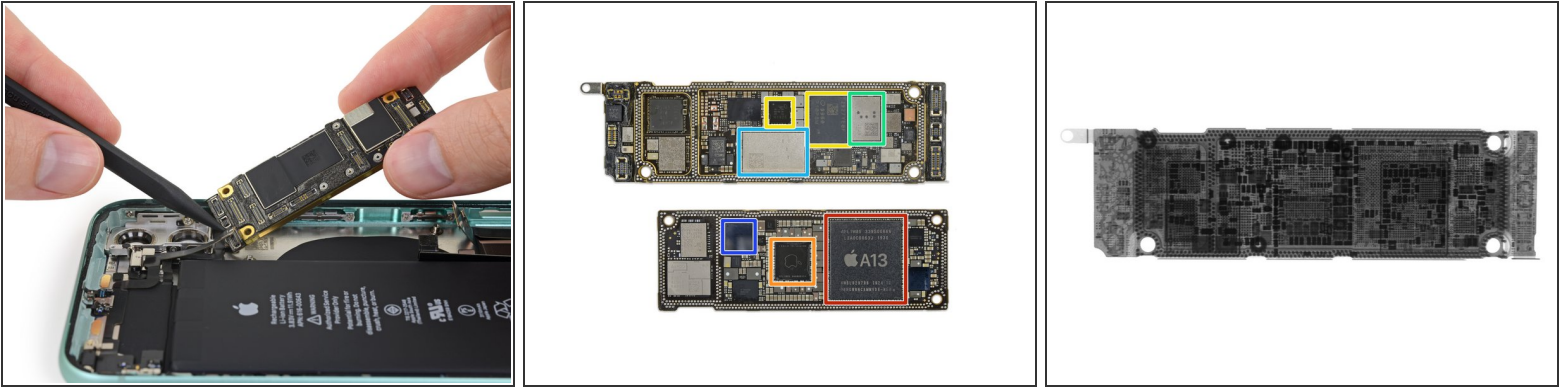
- The logic determining what makes a smartphone “Pro” is still up in the air, but one thing's for sure: you don't have to be a pro to open an iPhone these days.
- ① Ever since the [iPhone 6S](#), the procedure for getting past an iPhone's screen adhesive has been the same: heat, slice, and repeat. Just watch out for stray cables!
- [As on the new Pro phones](#), the screen assembly's cables are aligned to one side, but not as tightly and safely grouped together.
- All that ease, despite the improved IP68 water and dust resistance over the IP67-rated iPhone XR. Very nice! (Though, if we're being honest, we're in love with another phone that makes things [even easier](#), albeit without the water resistance.)

Step 5



- Though this phone isn't pro enough to have a telephoto camera, it does still get the upgraded wide and ultrawide sensors and lenses that both Pro models enjoy. That means faster shutter speeds, a wider ISO range, and Night Mode capability.
- X-rays show the promised optical image stabilization in the wide-angle module (the dark areas in the image are electromagnets). Meanwhile, the TrueDepth module's flex cables have been rerouted and are no longer pinned under the battery—making for far faster and easier access during camera repairs.

Step 6



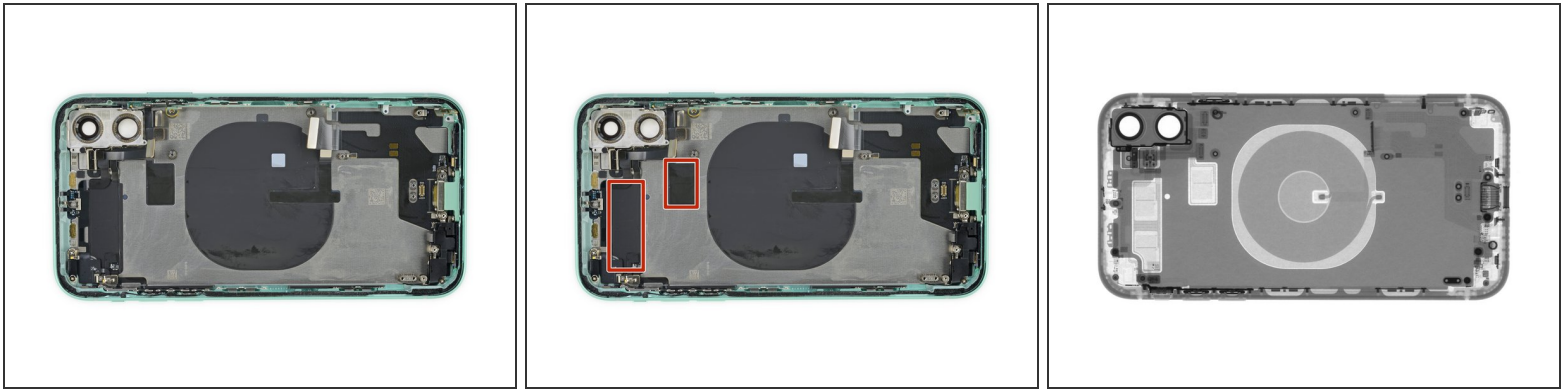
- Out with the logic board comes some savory silicon:
 - APL1W85: Apple's A13 Bionic system-on-chip, layered over SK Hynix LPDDR4X RAM. SK Hynix's documentation doesn't contain a decoder for this model number, but it's seemingly 4GB of the stuff.
 - Apple APL1092 343S00354 PMIC
 - Intel 9960 P10PSM modem and P10 406 transceiver.
 - The shiny silver *I7J9*, which we [have now confirmed](#) to be Apple's new U1 wireless positioning chip.
 - Apple / Murata 339S00647 WiFi/Bluetooth SoC
 - Cirrus Logic 338S00509 audio codec
- If you're hungry for more chips, check out our [complete Chip ID steps](#) from our 11 Pro Max teardown.

Step 7



- This rectangular battery is held down with a total of six GBs of RAM (Gooney Battery strips), and unfortunately does not share the streamlined removal process that the Pro phones have—to comfortably remove all those adhesive strips, you're going to have to remove the loudspeaker in addition to the Taptic Engine.
- That's not to say that we don't appreciate the stretch release adhesive—we <3 pull tabs!—but this does complicate the battery replacement process compared to its Pro siblings.
- This year's battery measures 40.81 x 96.93 x 3.97 mm, and weighs 44.1 g.
- Compared to the [XR's battery](#), the 11's is slightly smaller in size, despite the increased capacity. 3110 mAh is the new spec, which is about a 7% increase. That's not a huge difference, but it probably accounts for some of the supposed extra hour of battery life the iPhone 11 gets .
- ❗ If you prefer your battery stats in Watt-hours—as we generally do—you're looking at a jump from 11.16 Wh to 11.91 Wh.
- There's only one connector on this rectangular battery, but it's still included in Apple's new-hardware-that-improves-battery-health [document](#). Maybe that means the twin cables in the 11 Pro were for bilateral charging after all, and there's some other health-boosting hardware difference in the 11 lineup?

Step 8



- With the rear case nearly hollowed out, we finish with an X-ray that leaves us with a few lingering questions. Despite the lack of a second battery connector, we can't help but stare at this charging coil and wonder what might have been.
- If bilateral charging were included in the final production design, we wouldn't necessarily expect to see a radically altered coil—but a bigger battery and additional thermal management would almost certainly be required, as reverse wireless charging is thirsty and inefficient, throwing off a lot of heat.
 - In the case of this iPhone 11, we're not *really* seeing either of those things.
- Perhaps related to the missing second battery connector, we also see the omission of the new [battery charging board](#) we found in the Pro Max.
- Finally, just like in the Pro and Pro Max, our handy X-ray reveals what we believe to be UWB-related antennas carefully embedded into the rear case.

Step 9



- That's it for this year's iPhones! No more until next year, please.

[Unless...](#)

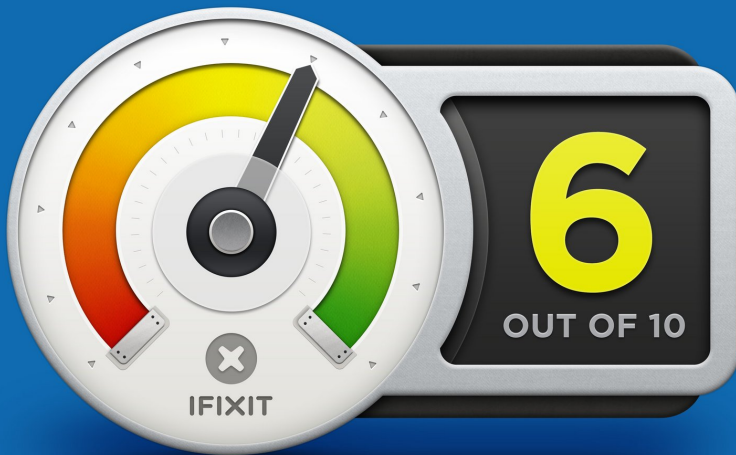


To sum it all up:

- Pro or no, all 2019 iPhones are shipping with stacked-PCB logic boards for maximum density and space efficiency.
- Unlike its Pro siblings, the vanilla 11 gets a very modest 7% battery capacity increase.
- *Like* its siblings, the 11 gains an ultra-wide-angle camera, some UWB hardware, and a big fat question mark as to whether Apple ever meant for it to have reverse wireless charging abilities.
- What does all this mean for repairability? Keep scrolling to find out.

Step 10 — Final Thoughts

REPAIRABILITY SCORE:



- The iPhone 11 earns a **6 out of 10** on our repairability scale (10 is the easiest to repair):
 - The prioritized display makes replacement of this critical component easier than in other devices.
 - Display swaps don't require too much hardware swapping to maintain Face ID.
 - We prefer screws and non-adhesive fasteners over glue, but tiny proprietary screws are still hostile to repair.
 - The high IP rating means your phone is better protected, but these measures also complicate repair.
- Front and back glass doubles the chances of breakage, and the rear glass can only be fully replaced with a complete housing swap.