



Google Pixel 3 XL Teardown

Teardown of the Google Pixel 3 XL, performed on October 16, 2018.

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INTRODUCTION

The Google Pixel 3 XL is all dressed up in the latest flagship phone uniform: glass on the back and a notch on the front. But we're headed past the shiny new facade, for a closer look at the insides. And there's only one way to get there—with a teardown!

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TOOLS:

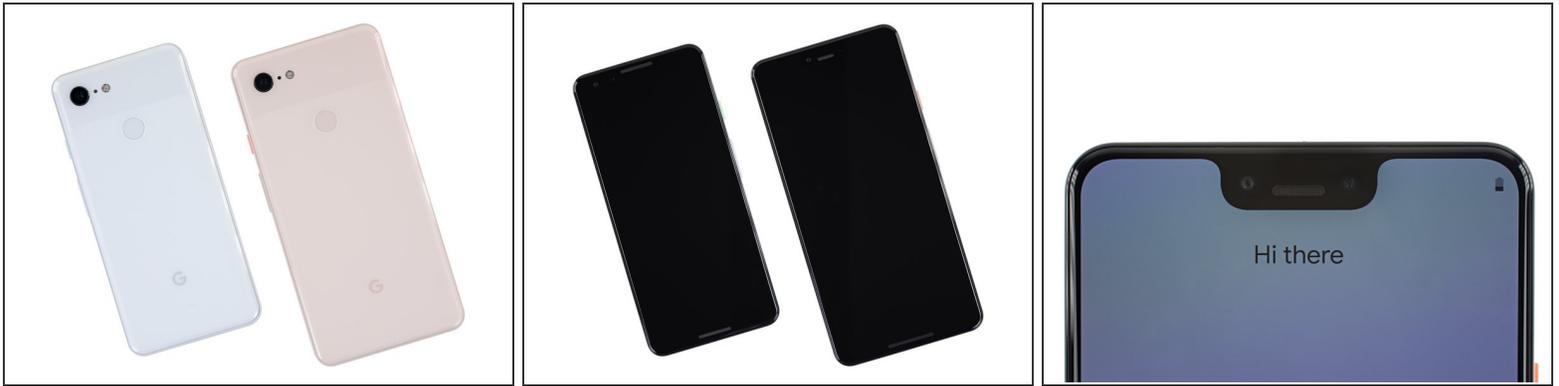
- [Heat Gun](#) (1)
 - [iSlack](#) (1)
 - [iFixit Opening Picks set of 6](#) (1)
 - [Tweezers](#) (1)
 - [T3 Torx Screwdriver](#) (1)
 - [Spudger](#) (1)
 - [Halberd Spudger](#) (1)
 - [Suction Handle](#) (1)
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Step 1 — Google Pixel 3 XL Teardown



- Let's take a look at the tech that lies under the Pixel 3 XL's newly-notched exterior:
 - 6.3" OLED display with QHD+ 1440 × 2960 resolution (523 ppi) and Gorilla Glass 5
 - Octa-core, 64-bit Qualcomm Snapdragon 845 processor (2.5 GHz + 1.6 GHz) with 4 GB LPDDR4x RAM
 - 12.2 MP, *f*/1.8, OIS main camera with dual-pixel phase detection autofocus; dual 8.1 MP selfie cameras
 - 64 GB or 128 GB built-in storage
 - Qi wireless charging
 - IP68 water resistance
 - Android 9.0 Pie

Step 2



- Before diving inside, let's take a look at the sleek exterior of the Pixel 3 XL alongside its smaller sibling.
- The new backing on these phones looks a lot like the hybrid cover from the [last two generations](#), but this time around it's all a single piece of glass (with a partial matte finish).
- ⓘ Unfortunately glass is nowhere near as durable as aluminum, so we're hoping for an easy way to replace what will likely be a commonly-broken part.
- Turning to the front, we spy an extra camera sitting atop both displays.
 - That's right—while everyone else has been [throwing more cameras on the back](#), Google turned around and added an ultrawide (19 mm equivalent) camera next to the existing wide angle (28 mm equivalent) camera.
- Exclusive to the Pixel 3 XL is a [trendy](#) little [robot](#) notch that greets us as we turn on the phone.

Step 3



- The front-firing speakers on both Pixel 3's leave the aluminum frame devoid of any speaker grilles.
- Stacked together, it's obvious that one of these phones is a little more XL than the other, but there's not much difference otherwise.
- USB-C charging port, SIM card slot, and [80's themed](#) power buttons are present and accounted for on both phones.

Step 4



- Now that we've worked our way around the exterior, it's time to head inside.
- [Experience](#) tells us that a little suction and cutting is all that's required to coax the display open, but when that doesn't work we bring out the big (heat) guns.
 - It looks like the Pixel 3 XL still uses foam adhesive, but it's far more tenacious than the repair-friendly stuff we saw last year.
- We pull out the trusty [iSclack](#), expecting to separate the display assembly, but the rear cover yields first!
- ⓘ This whole thing is starting to remind us less of the Pixel 3's predecessor, and more of its [notoriously sticky contemporary](#).

Step 5



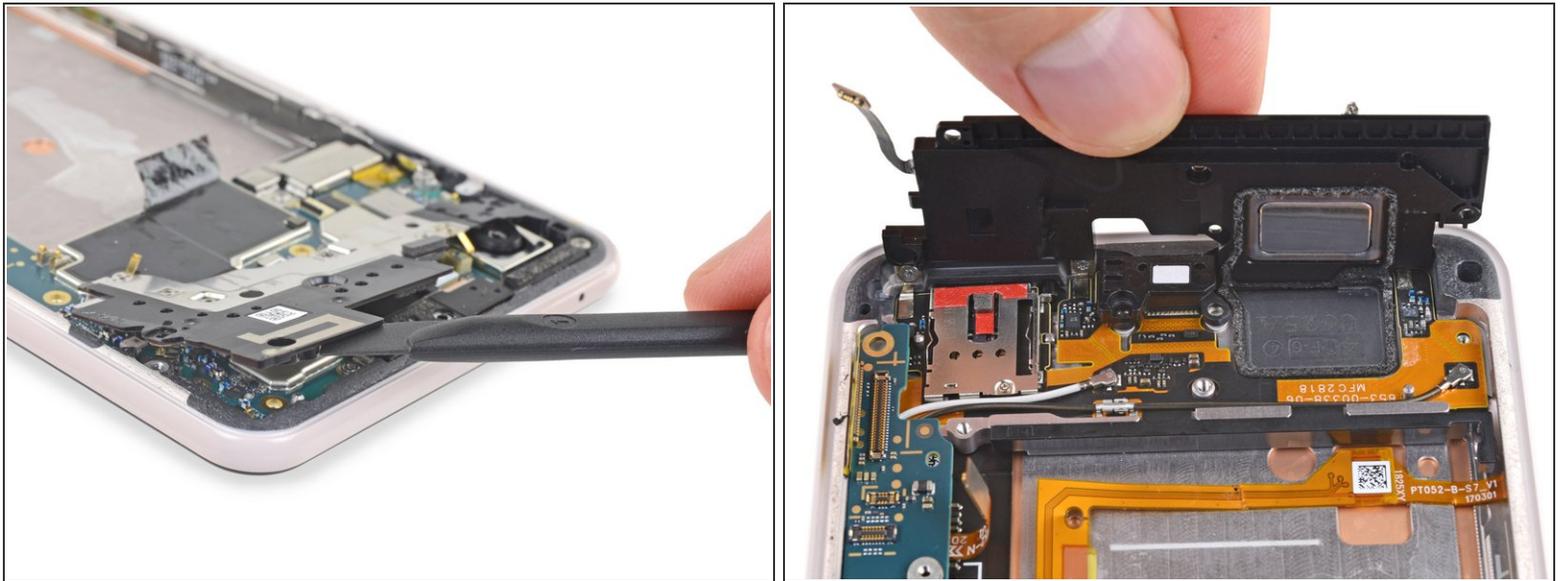
- After struggling through quite a bit more adhesive than expected, we're in!
 - ⓘ Maybe Google thought the extra glue was necessary for that extra liquid IP point, but we've seen other [IP68 phones](#) that are easier to open.
- Thankfully, the fingerprint sensor cable is long enough to avoid being torn by over-zealous openers.
- The view inside is pretty much what we expected: a shiny new wireless charging pad, a battery, a board, a couple cameras, and a fingerprint sensor living on the rear cover.
- Slightly less expected are metal covers over the motherboard, and a SIM tray hidden somewhere underneath the speaker assembly.
- Google thought they'd scare us off with a few screws? Well guess what: we [came prepared](#) with a Torx bit for these screws, and 111 other bits just in case.

Step 6



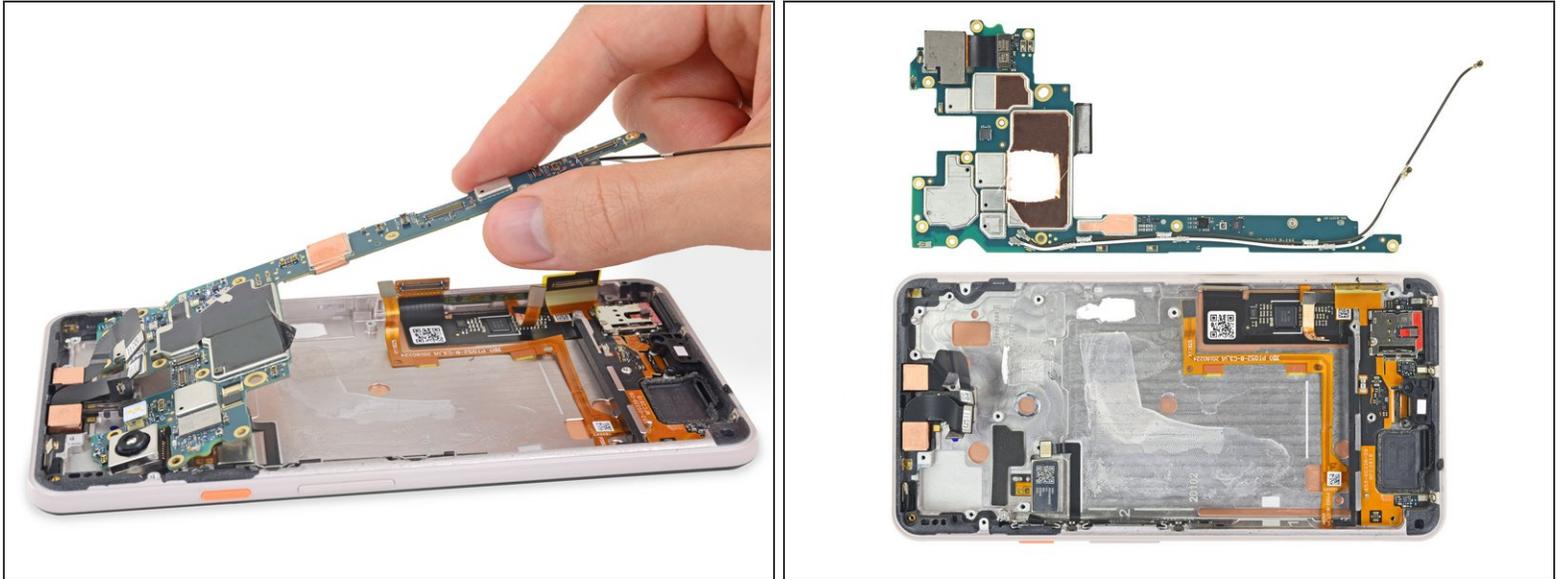
- The tough adhesive trend continues, holding the wireless charging coil to the Pixel's powerhouse. But we spy some respite!
- The battery is secured with relatively repair-friendly stretch-release adhesive. So you get at least one chance at easy removal, if your technique is right!
- ⓘ These strips didn't actually help *us* much, but the [Pixel 3](#) had better luck.
- We resort to flossing out the battery and accidentally cut a fragile ribbon cable hiding underneath! Forewarned is forearmed—a repair manual would have helped us in this arena.
- Adhesive ordeals aside, the battery's out: the Pixel 3 XL is packing 13.2 Wh. That's actually down a smidge from the [Pixel 2 XL's 13.6 Wh](#), and around the same as the original [Pixel XL's 13.28 Wh](#).
- The Pixel 3 XL still beats out the [iPhone XS Max](#) (12.08 Wh), and comes close to the [Galaxy S9+](#) (13.48 Wh).

Step 7



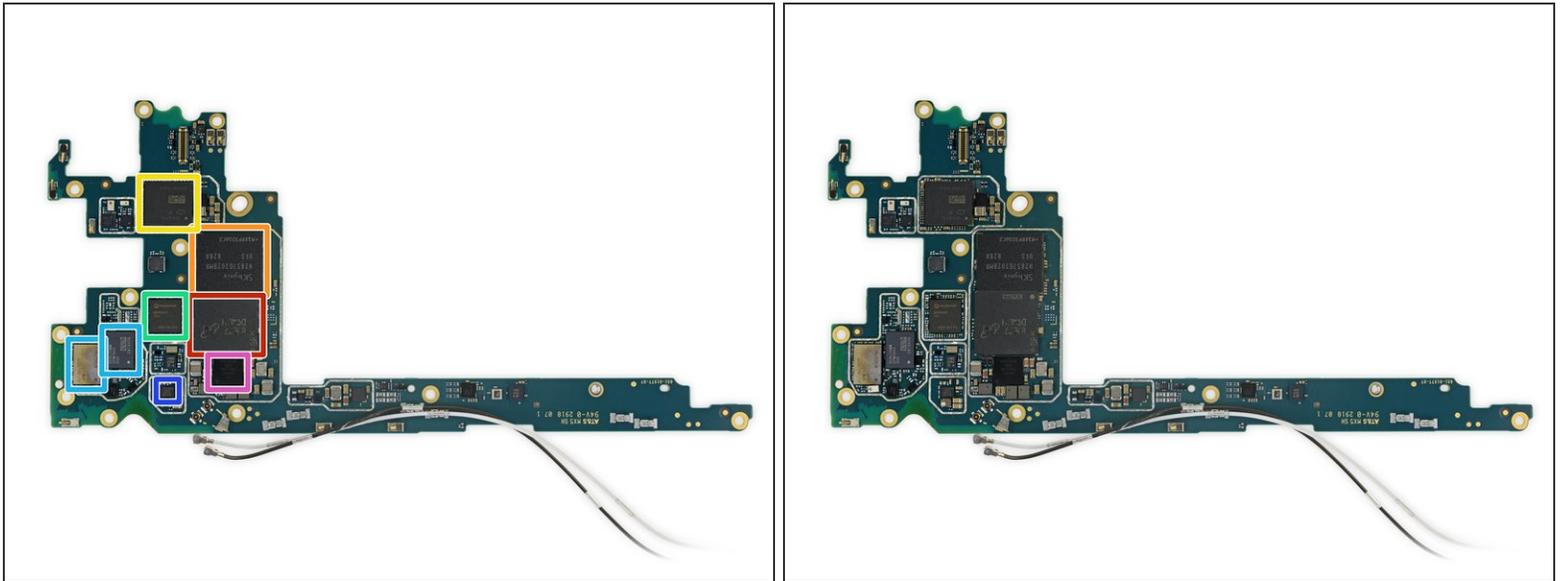
- Above the crater where the battery once lay, we extract an antenna shielding the motherboard.
- On the south end of the phone, we battle some more adhesive to release what seems like just another shield.
 - [Another trap!](#) This shield is actually the speaker housing, which we just split in half trying to access the components underneath.
- ⓘ The speaker chamber is sealed with waterproofing adhesive, and that seal has to be broken to access any of the commonly-serviced ports on the daughterboard.

Step 8



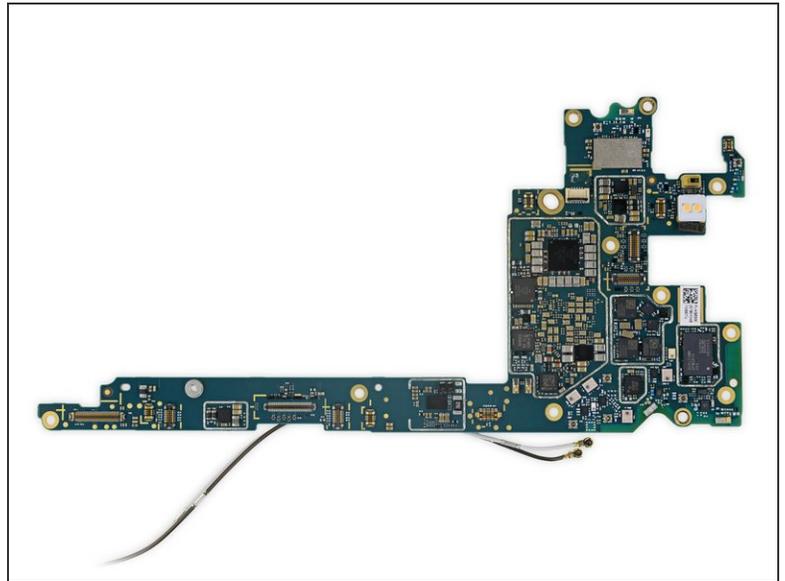
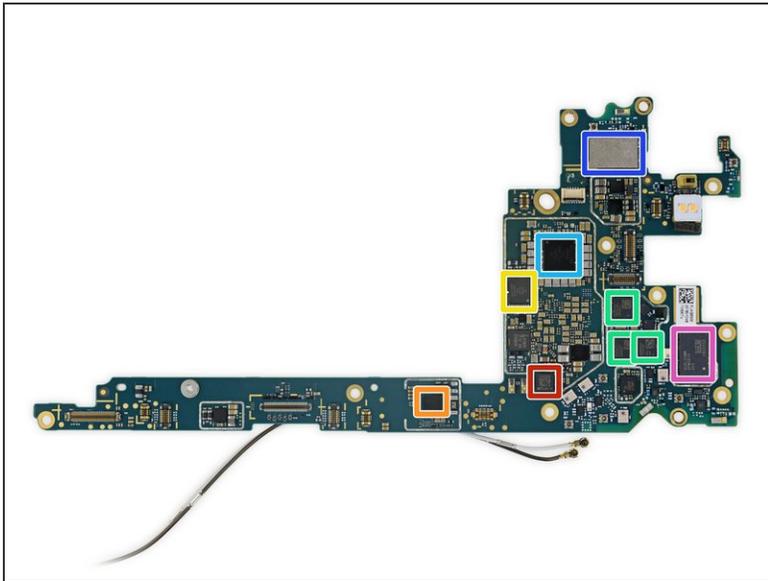
- With its shields down, we can finally get a look at the newest Pixel's motherboard.
- As the board comes out, we can't help but notice generous helpings of thermal paste on its underside, to transfer heat from the hardest working chips to the metal frame.
- ⓘ It seems like a lot of paste, but powerful hardware produces a lot of heat.

Step 9



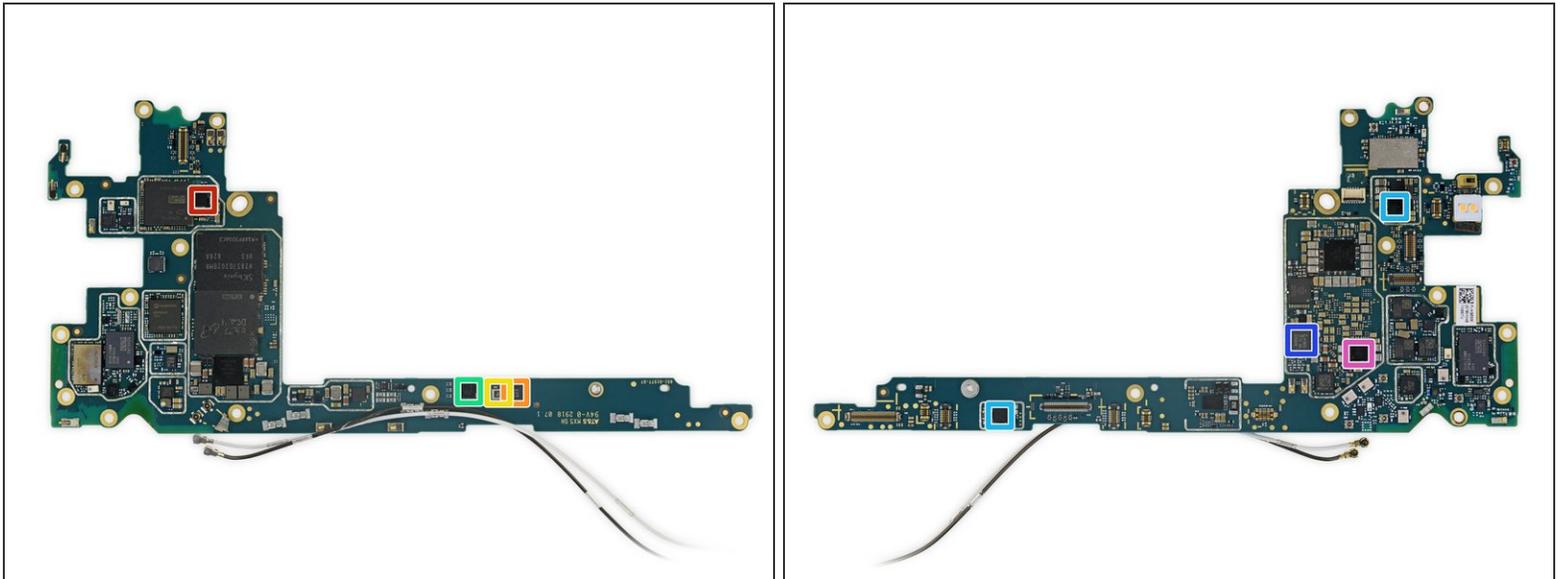
- All this glue has us tired—let's sit down for some chips:
 - Micron [MT53D1024M32D4DT-046 AIT:D](#) 4 GB LPDDR4X DRAM layered over Qualcomm Snapdragon 845
 - Skhynix [H28S7Q302BMR](#) 64 GB NAND flash (universal flash storage)
 - Google [SR3HX](#) Pixel Visual Core (as seen in the [Pixel 2 XL](#))
 - Qualcomm SDR845 RF Transceiver
 - Qualcomm QPM2622 and QPM2642 low and high band power amplifier module (PAMiD)
 - Qualcomm [QET4100](#) 40MHz envelope tracker
 - Qualcomm [PMI8998](#) PMIC

Step 10



- Maybe just a couple more...
 - Google [H1C2M](#) Titan M [security chip](#)
 - IDT [P9221](#) Qi wireless charging receiver
 - Qualcomm [WCD9340](#) Aqstic audio codec
 - Qualcomm [QDM3620, QDM3670, QDM3671](#) Diversity Receive Modules
 - Qualcomm PM845 power management IC
 - Murata 1QB SS8601001, likely a WiFi module
 - Qualcomm QPM2635, likely a mid-band power amplifier module

Step 11



- Okay just a little more, we can't help ourselves:
 - Cirrus Logic CS40L20 audio amplifier
 - Bosch Sensortec [BMI160](#) 16-Bit, 3-Axis accelerometer/gyroscope
 - Bosch Sensortec [BMP388](#) pressure sensor
 - Maxim Integrated [MAX11261](#) 24-Bit, 6-Ch. delta-sigma analog-to-digital converter
 - Cirrus Logic CS35L36 audio amplifier
 - NXP Semiconductor [PN81B](#) NFC controller
 - Qualcomm PM8005 power management IC

Step 12



- We carefully extract the ~~left-eye ball~~ wide angle camera, which is lightly adhered to the frame.
 - ⓘ According to Google, this extra camera will let you fit more of your friends into your selfies, which makes them ... Group-ies?
- On the back, Google is again betting that AI can help a single sensor to do [the work of two](#).
 - Based on early reviews, they may be right. Word on the street is, this is a [slightly upgraded Sony IMX363](#) sensor—the rest is up to the Pixel Visual Core.
- A Knowles MEMS microphone is also seen in the top center of the case

Step 13



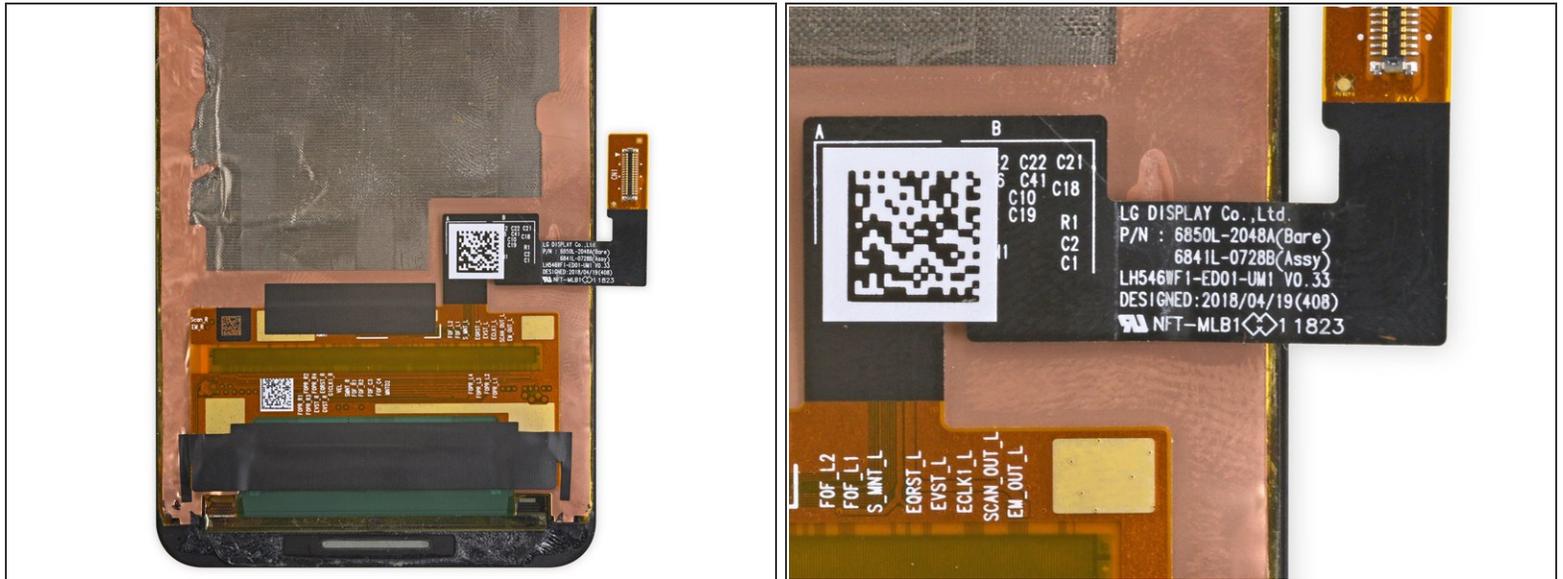
- The daughterboard comes out without any fuss, taking the USB-C port, SIM tray, and some antenna hardware along with it.
- The vibration motor is a little more reluctant to leave its home, but our [Halberd Spudger](#) can be very persuasive.
- ⓘ This vibration motor is said to be improved from [last year](#), capable of providing more precise haptic feedback.
- The strain gauges come out looking just as [huggable](#) as ever.

Step 14



- In the name of science, we opt to dismantle our display to learn from whence it came. Its defenses are strong, but no match for heat, patience, and a [can-do attitude](#).
- ⓘ At first, the frame's black border [tricks us](#) into thinking the display curves down to the frame. Future pryers, beware!
- Drumroll please.... [it's a Samsung!](#) Rumors were all [over the place](#), but it looks like Google is going with Samsung's trusty AMOLED panels this year.
- Samsung's panels should be a little more reliable than [last year's](#), but unfortunately this one comes with a Samsung-esque repair process as well.
- ⓘ Replacing a Pixel 3 screen will be tricky, and will most likely require replacing the whole frame of the phone.
- Last, but not least, a display chip sitting alone on the display cable:
 - Samsung S6SY761X touch controller ([as seen on the S9+](#))
 - GigaDevice GD25LQ80 8 Mb serial flash memory

Step 15



- **Teardown Update:** since you asked, we dissected the display in the smaller Pixel 3 as well. Guess what? This one's from **LG Display!**
- ① So it's a full reversal from the situation last year, where the Pixel 2 got a Samsung panel and its bigger sibling had a display from LG.
- Rumor has it LG has been working hard to improve its OLED mobile technology—we're curious to see how their new display fares this year.

Step 16



- Here are all the pretty parts that are packed into this ~~Galaxy~~ Pixel!
- Hungry for more teardown treats? The video team is here to please with the [Pixel 3 video teardown!](#)
- It seems like the Pixel has been hanging out with the troublemaking Galaxy line, leaving it with familiar-looking antenna assemblies, a stubborn battery, and a tough-to-replace display—manufactured by Samsung itself!
- Not only will swapping a cracked screen require a complete phone disassembly, but you've gotta think about the back now, too. The Pixel 2 XL rear glass covered 20% of the phone—the Pixel 3 XL's rear panel is 100% crackable. That doesn't bode well for repairability...

Step 17 — Final Thoughts

REPAIRABILITY SCORE:



- The Google Pixel 3 XL earns a **4 out of 10** on our repairability scale (10 is the easiest to repair):
 - The only screws are standard T3 Torx fasteners.
 - Repair-friendly stretch-release adhesive secures the battery.
 - O-rings and adhesives for waterproofing complicate repairs, but make difficult liquid damage repairs less likely.
- Display repairs are much more difficult than previous models, requiring complete disassembly of the phone.
- To service any component, you'll have to painstakingly un-glue (and later re-glue) the glass rear panel.
- Front and back glass means increased vulnerability to drop damage.