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# INTRODUCTION

It's only been 9 months, and already LG has a new top dog: the G5. After our [teardown of the G4](#) last year, we applauded LG for remaining steadfast and resolute in offering removable batteries. But we also wondered how they could both keep the accessibility and compete with the unibody trend.

The answer is before us today, in the form of the LG G5—a unibody smartphone with an easily removable battery. Let's tear it down and see what other repairability tricks or treats it's hiding.

Stay up-to-date on all the latest teardown news from iFixit! Follow us on [Instagram](#), [Twitter](#), and [Facebook](#)!

[video: <https://www.youtube.com/watch?v=c8x9uAH7QJM>]

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## TOOLS:

- [Phillips #00 Screwdriver](#) (1)
  - [iFixit Opening Picks set of 6](#) (1)
  - [Tweezers](#) (1)
  - [SIM Card Eject Tool](#) (1)
  - [Spudger](#) (1)
  - [Metal Spudger](#) (1)
  - [iOpener](#) (1)
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## Step 1 — LG G5 Teardown



- We're most interested in the G5's design, but some potent hardware lurks inside as well. Specs include:
  - 5.3-inch "Quad HD" IPS multi-touch display with 2,560 x 1,440 resolution (554 ppi)
  - Qualcomm Snapdragon 820 processor with Adreno 530 GPU and 4 GB RAM
  - Dual rear cameras (16 MP OIS primary and 8 MP wide-angle) and 8 MP front camera
  - 32 GB on-board storage, with expandable microSD card storage up to 2 TB
  - USB Type-C + 802.11 a/b/g/n/ac wi-fi + Bluetooth 4.2 + NFC + IR blaster
  - Fingerprint sensor + accelerometer + gyro + proximity sensor + barometer
  - Android 6.0 Marshmallow

## Step 2



- A quick comparison with last year's LG G4 shows off the G5's smoother, rounder, and *more metallic* exterior.
  - When stacked up against (or on top of) its older sibling, the G5 seems a *bit* chunkier than the G4. The G4 also felt nicer in the hand, and was a bit easier to grip.
  - Apparently, LG's move to a modular design and the use of the [LM201 aluminum alloy](#) forced them to step back from last year's slightly sleeker form factor. Still, we sense good things in store.
- ⓘ Is it just us, or does the G5 kinda look like [Johnny 5](#)?

## Step 3



- We take a second to appreciate LG's little reminder that the G5 comes with a super-removable battery. *How cute.*
- With the press of handy a button, we slide out the G5's battery module. Yep, removing the battery is even easier than it was on their [last flagship phone](#).
- ⓘ Replaceable batteries make us happy. They play a huge role in minimizing the amount of [e-waste](#) associated with consumer electronics. Not to mention, they add the ability to carry an extra battery, so you don't [run out of juice](#).
- ⓘ *We doubt we'll hear of many G5's getting tossed out due to a dead battery.*

## Step 4



- We're ready to start pulling things apart, but we'll restrain ourselves just long enough for an X-ray scan. Our ingenious pals at [Creative Electron](#) show us what we're up against this round.
- Do our X-ray eyes deceive us, or does this look a lot like an [iPhone](#)? Well, except for that snappy removable battery, of course.
- ☑ Small metal backing in the center of the phone, ~~logi~~motherboard stage right, battery at center left—could it be phone Feng Shui?
- An X-ray lineup confirms the G5 almost perfectly splits the difference between the iPhone 6 (left) and 6 Plus (right).
- Looks like that end-cap module is more than just a battery holder and USB. Time to pop that sucker open.

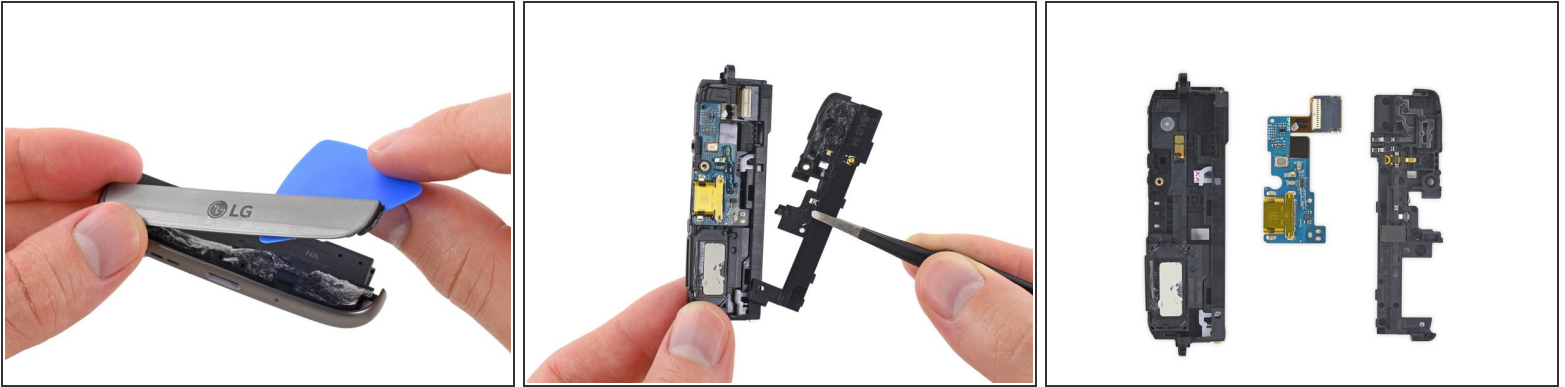


## Step 5



- It takes a pretty serious tug to decouple the G5's battery from its module—probably not something you'll do by accident.
- The 3.85 V, 10.8 Wh, Li-Ion battery in the G5 weighs in at 2800 mAh—just edging out the 2750 mAh cell in the [iPhone 6s Plus](#)...
- ⓘ But, it's a slight capacity decrease from the 3000 mAh whoppers we found in the G5's [predecessor](#) and Samsung's recent [Galaxy S7](#).
- Our guess? LG is banking on their customers taking advantage of that replaceable battery to swap on the go if needed, negating the need for a super-huge capacity.

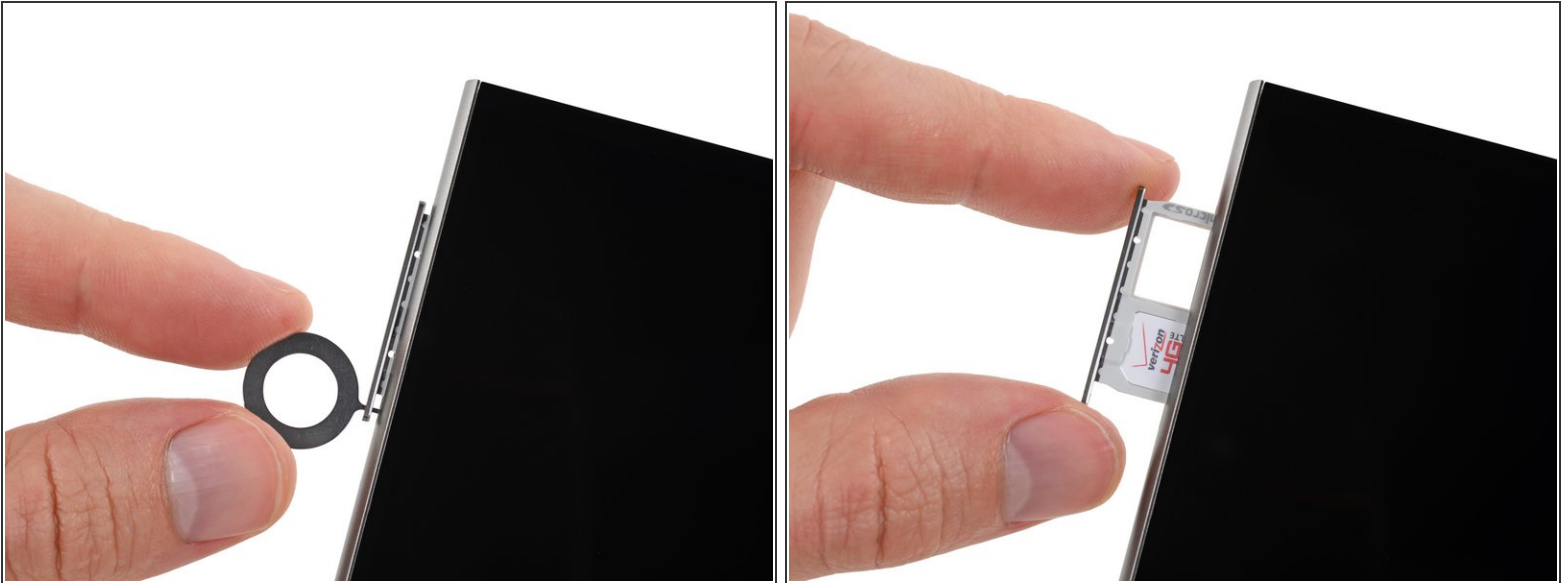
## Step 6



- Okay, but what's in the module itself?
  - Probably [magic](#).
- And glue. The front and back module covers are very well glued in place.
  - ① [Plasticgate 2016](#) update: That small front cover is plastic, but the rear one is certainly [fancy aluminum](#).
- Picking apart the module reveals a few [screws](#), some glue, and a surprising amount of goodies awaiting perusal.
- In addition to making USB port replacements easier than ever, the tiny battery module also contains a speaker, some antennas, and a lot of spring contacts.



## Step 7



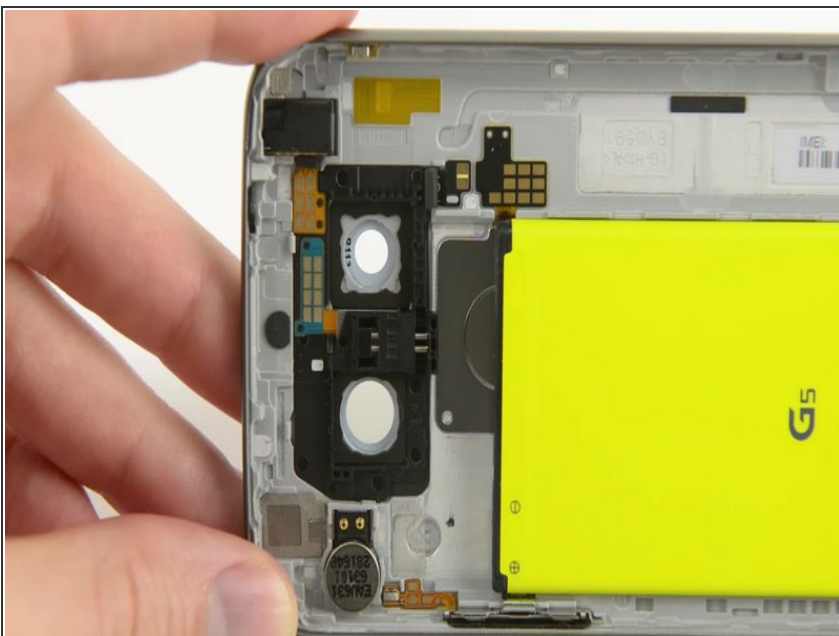
- As it sinks in that we've removed the battery without opening the phone, we turn our attention to the SIM card.
- A single tray houses both the SIM card and microSD card.
- ⓘ Though the G5 [doesn't support Android's adoptable storage](#), LG holds to their tradition of including external storage in their flagship phones—another win for longevity and, in all likelihood, a net reduction in e-waste.
- Yes, the day will probably come when 2 TB of storage in your smartphone just isn't nearly enough. But right now, that day looks comfortably far off.

## Step 8



- After just two screws and some pry-able clips, we pop open the display with ease. No fuss, no adhesive.
  - It's a decidedly iPhone-esque display opening, in the best possible way—or at least, it's much like how iPhone display removal *used* to go, before all that [adhesive](#) crashed the party.
- i** Really though, regardless of the insides, LG has finally figured out the modular unibody. The display is seamlessly mounted in the rear case, making for a luxury feel—while still maintaining battery access. We hope this trend catches on.

## Step 9



- What's better than a user-removable battery? Why, a user-removable battery with a mechanical shock absorber.
- i** This springy mechanical doodad helps the G5's battery slide perfectly into its parking space, and gives a satisfying tactile *snick* as you click it into place.

## Step 10



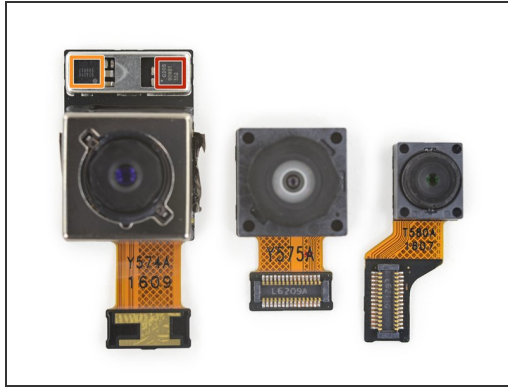
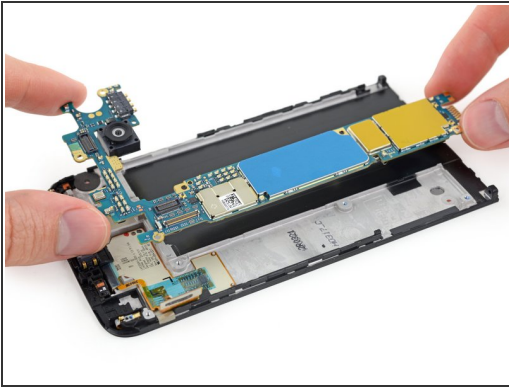
- With the display out and the battery removed right from the get, the chassis has little to hide: vibrator motor, headphone jack, and buttons are all that remain. Time to drain the tub.
- A hefty and very well-adhered metal plate keeps the back button pressed to the case, and probably adds ingress proofing. (It also reminds us a bit of the [bi-metal Apple logo](#).)
- The G5's fingerprint sensor is a little different than the one we found in the LG-made [Nexus 5X](#), but it houses a familiar set of spring contacts.

## Step 11



- Out comes one front-facing camera and one (of two) rear-facing cameras—hooray modularity!
  - ❗ That big shiny one is the primary 16 MP rear camera, with extra girth to accommodate the optical image stabilization mechanism.
- The third and final camera—the auxiliary 8-MP rear shooter with the trick wide-angle lens—is trapped helplessly under the motherboard, so we'll come back to these guys in just a moment.

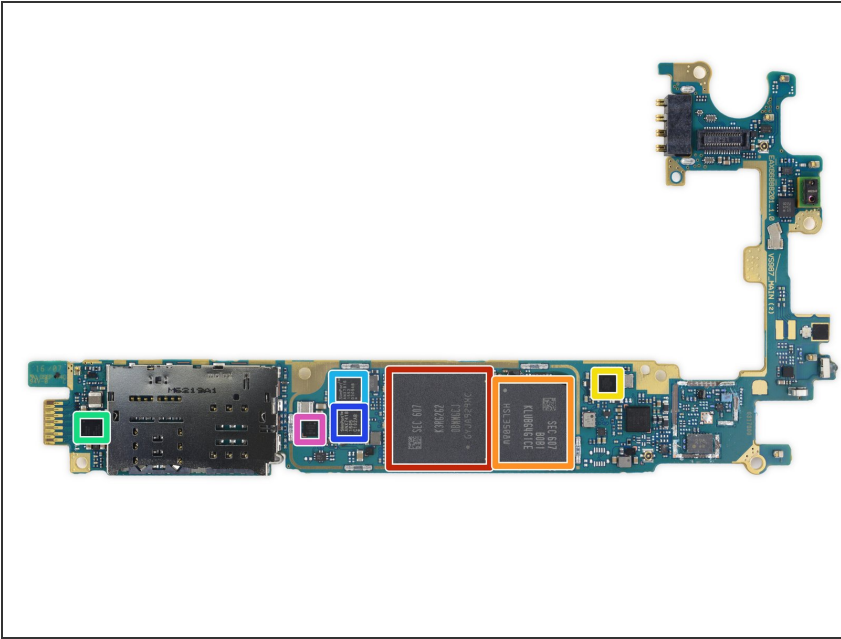
## Step 12



- Let's pop that motherboard off and snag the final camera for a family photo! From left to right:
  - Like the [G of yesteryear](#), the G5 sports a 16 MP,  $f/1.8$  camera with a  $1/2.6''$  image sensor.
  - LG also packed in a 135-degree, wide-angle camera with an  $f/2.4$  aperture and 8 MP image sensor—perfect for your [tiger jumping](#) photo shoots.
  - Matching last year's selfie shooter, a wee 8 MP front-facing camera rounds out the trio.
  - IC Identification:
    - ● Invensense [ICG-1020S](#) 2-Axis MEMS OIS Gyroscope
    - ● Rohm BU24234 OIS Driver



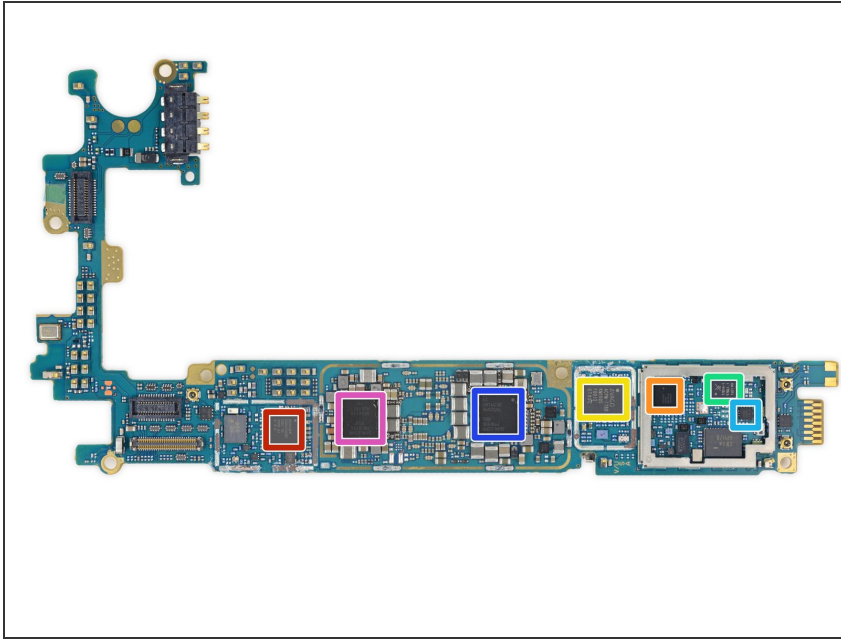
## Step 13



- There's been a lot of talk about the G5's new aluminum alloy, but let's take a look at its silicon:
  - Samsung [K3RG2G20BM-MGCJ](#)  
4 GB LPDDR4 RAM with quad-core Qualcomm [Snapdragon 820](#) SOC layered beneath
  - Samsung [KLUBG4G1CE-B0B1](#)  
32 GB MLC Universal Flash Storage 2.0
  - NXP Semiconductor [54802](#)  
(PN548) NFC Controller
  - Qualcomm [SMB1350](#) Quick Charge 3.0 IC
  - Analogix SlimPort [ANX7816](#)  
Ultra-HD Transmitter
  - Analogix SlimPort [ANX7418](#)  
USB-C Switch/Controller
  - Qualcomm [WSA8815](#) 4 W Class-D Audio Amplifier

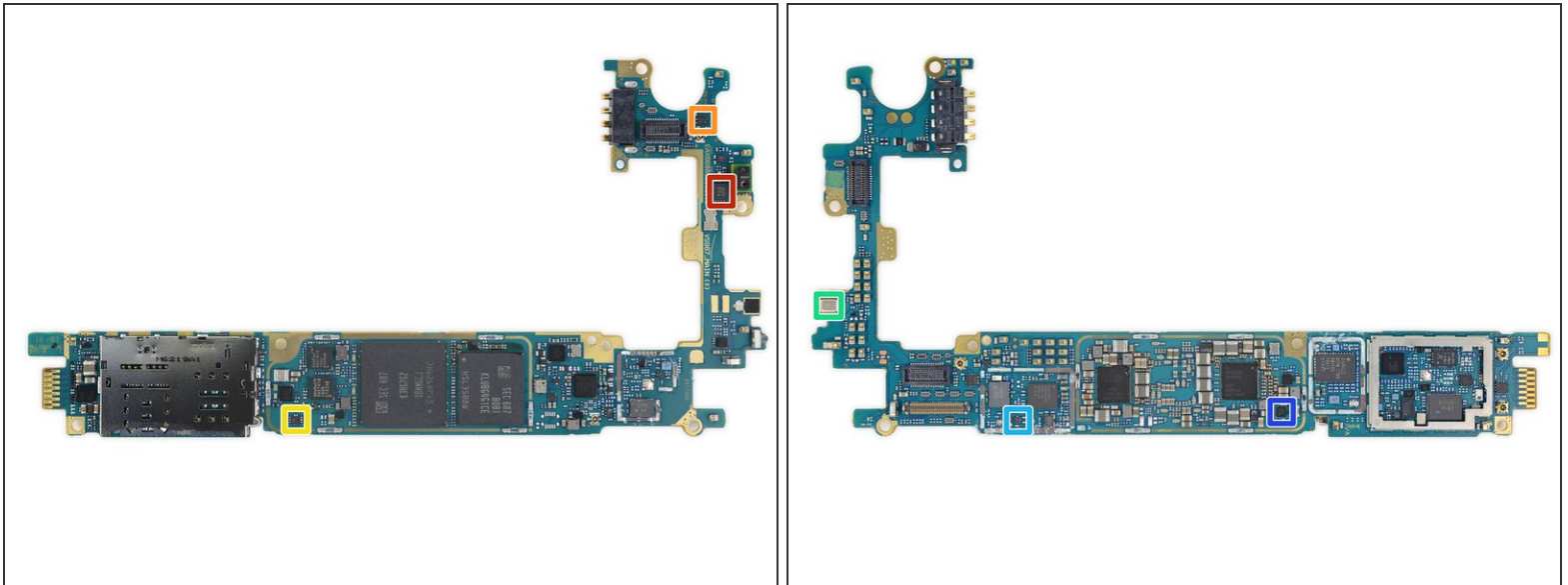


## Step 14



- More chip goodness on the rear of the motherboard:
  - Broadcom [BCM43455](#) 5G Wi-Fi Combo Chip
  - Qualcomm [WTR3925](#) LTE Transceiver
  - Avago [ACPM-7788](#) Multiband Multimode Power Amplifier
  - Skyworks [SKY77814-11](#) LTE Power Amplifier Module
  - Skyworks [SKY13560](#) RF Switch
  - Qualcomm PM8996 Power Management IC
  - Qualcomm PMI8996 Power Management IC

## Step 15



- IC Identification, pt. 2:
  - Bosch Sensortec BMI120 3-axis accelerometer/gyroscope
  - Rohm hall sensor
  - ON Semiconductor [FSUSB104UMX](#) 2-Port, 480 Mbps USB 2.0 switch
  - Knowles MEMS microphone
  - Skyworks [SKY13351-378LF](#) GaAs SPDT switch
  - Qualcomm QFE2101 antenna tuner (likely)

## Step 16

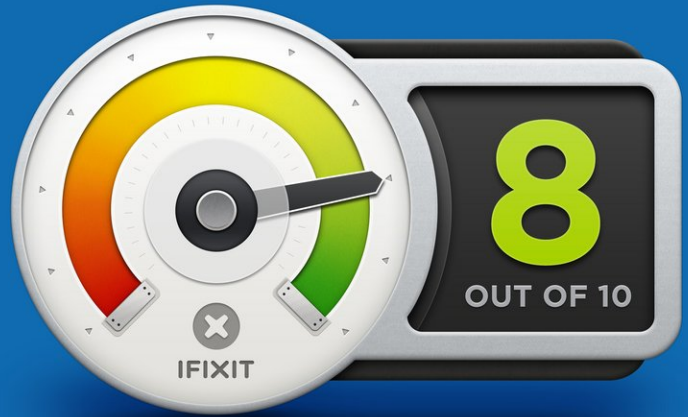


- As a final treat, we take a closer look at the (unsurprisingly LG-manufactured) display. Its cable has some chips and markings (like a Macronix [MX25V1006E](#) 1 Mb serial flash memory)—and we've got a speaker, and a smattering of contacts.
- A closer look at the display cable reveals that this G5 apparently has a name: *Alice*.
- ① We're not going any further down this rabbit hole; we have a score to assign!

## Step 17



## REPAIRABILITY SCORE:



- LG G5 Repairability Score: **8 out of 10** (10 is easiest to repair)
  - The user-removable, slide-out battery is a huge boon to phone lifespan.
  - No glue and few screws make for a relatively simple opening procedure.
  - Standard Phillips #00 screws means the right tool is probably already in your toolbox.
  - Many components are modular, making for easier, cheaper part replacement.
  - Module covers are glued on, making repairs a bit sticky—but the module itself greatly simplifies the process of replacing a faulty USB port.
  - The fused display assembly will need to be replaced if the LCD or glass breaks, increasing costs.