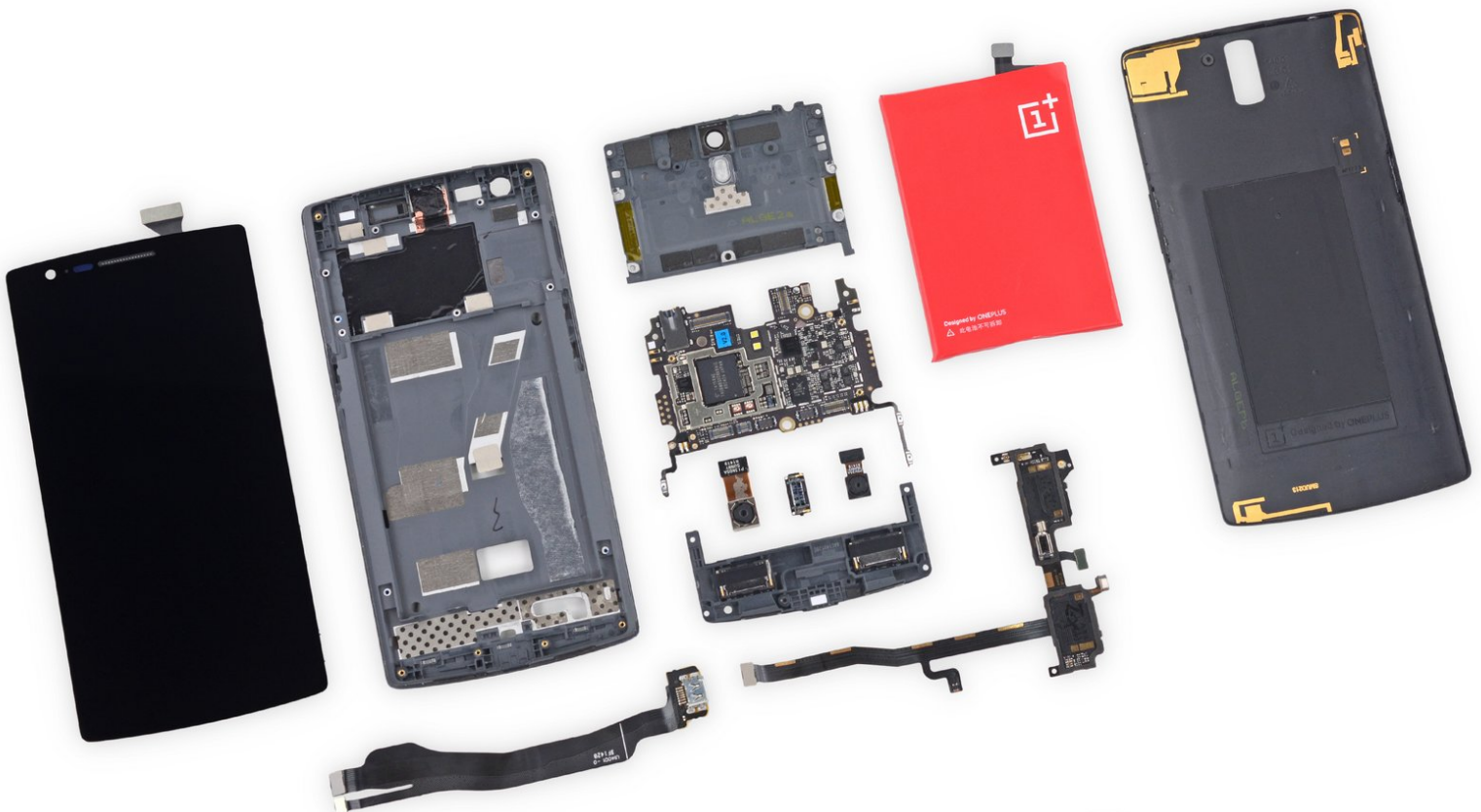




# OnePlus One Teardown

Teardown of the OnePlus One, performed June 17, 2014.

Written By: Jeff Suovanen



# INTRODUCTION

Everyone thought OnePlus One was *two*, but times have changed. Industry newcomer OnePlus aims to adjust everything you know about smartphones, and possibly arithmetic, with the OnePlus One. Is this smartphone more than the sum of its parts? Join us as we find out, teardown style.

Looking for some new mathematical adventures? Forget your high school algebra trauma by joining us on [Facebook](#), following us on [Twitter](#), and enjoying our [Instagram](#).

[video: [https://www.youtube.com/watch?v=gNnUN8h\\_rVg](https://www.youtube.com/watch?v=gNnUN8h_rVg)]



## TOOLS:

- [SIM Card Eject Tool](#) (1)
- [iFixit Opening Tools](#) (1)
- [Spudger](#) (1)
- [Phillips #00 Screwdriver](#) (1)
- [Tweezers](#) (1)
- [iFixit Opening Picks set of 6](#) (1)
- [iOpener](#) (1)
- [iFixit Tech Knife](#) (1)

## Step 1 — OnePlus One Teardown



- Before digging our digits into the One, we pause to count up its specs:
  - 5.5" IPS display with a resolution of 1920x1080
  - 13 MP f/2.0 rear-facing camera with dual-LED flash along with a 5 MP front-facing camera
  - Qualcomm Snapdragon 801 processor with 2.5GHz Quad-core CPU
  - 3 GB LPDDR3 1866 MHz RAM
  - 64 GB eMMC 5.0 storage capacity (also available in 16 GB)
  - 802.11b/g/n/ac Wi-Fi, Bluetooth 4.0, USB OTG, GPS/GLONASS, NFC
- Impressive hardware, to be sure—but this here's a teardown, and the number [One](#) has left us a bit traumatized of late. Here's hoping the "Plus" stands for "more repairable than phones of yore..."

## Step 2



- Designed by OnePlus and assembled in China, the OnePlus One is identified as model number A0001.
- The One is powered by a custom version of Android, CyanogenMod 11S, created by Cyanogen, Inc.
- ❗ What's so special about [CyanogenMod](#)? It's an open source operating system for smartphones and tablets based on Android. It offers features and options not found in Android versions distributed by mobile vendors.
  - The OnePlus One is the second phone to come preinstalled with CyanogenMod, the first phone being the [OPPO N1](#) CyanogenMod Edition.
  - We're pretty excited to see the One has an open source OS and is completely unlocked, both of which [protect the rights of consumers](#).

## Step 3



- Compared to the current top-selling smartphone, the iPhone 5s, the One is slightly thicker at 8.9 mm (vs. 7.6 mm) and significantly taller at 152.9 mm (vs. 123.8 mm).
- While this isn't quite a phablet, [reviewers](#) are saying this One's a tad big for single-hand use. Unless, of course, you're the Hulk.

## Step 4



- Lookie here! What's in this [red box](#)?
- A power adapter and a fancy USB cable with an inside-out connector, has OnePlus finally defeated the [USB plug scourge](#)?
- Oh and a SIM eject tool with *keychain caddy*. Because, how many times have you wished you had an eject tool hanging off of your keyring?
  - Never? Same here. But it sure looks cool.
- The nigh invisible SIM slot opens with the touch of said fancy eject tool, and we've breached the perimeter of [this monolith](#).

## Step 5



- With that, our plastic opening tool is ready to attack!
  - The One presents no obvious point of entry, but [since OnePlus will offer interchangeable back plates](#) we decide to start at the back case. We wiggle our way into a seam to see what's what...
  - ...and to our delight, the back plate comes off readily—with just a bit of resistance from a few clips around the edge.
- i** While interchangeable parts are always a plus for repairability, we don't expect the back to be prone to the same [catastrophic failure](#) as the front glass.



## Step 6



- Baby's got back...case, that is. With the back case free, we see the first glimpse of the embedded rechargeable 3100 mAh LiPo battery.
- At first glance this One seems to have a heftier, and more accessible, battery than the [other One](#).
- This back case is a gold-laced antenna party.
- Spring contacts in several places join three gold antennas plus one NFC sticker antenna to the phone body.



## Step 7



- We poke at the giant red battery for a bit ([reenactment of actual events](#)) until we finally succeed in popping it up with a spudger.
- Alas! It seems our reach has temporarily exceeded our bite, as the battery cable disappears under a screwed-in panel.

## Step 8



- No matter—out go the first round of screws, thanks to our Pro Tech Screwdriver Set.
- But it's not over yet! The One deals us a one-two punch with some hidden screws.
  - ✦ We don't take kindly to screws hidden under rubber stoppers around here. And that last screw is sporting a white sticker on its head, now forever maimed by our screwdriver, proving that we've been inside...*tampering*.
- The device hasn't proven especially difficult to enter, but small deterrents like hidden and tamper-evident screws never sit well with us.

## Step 9



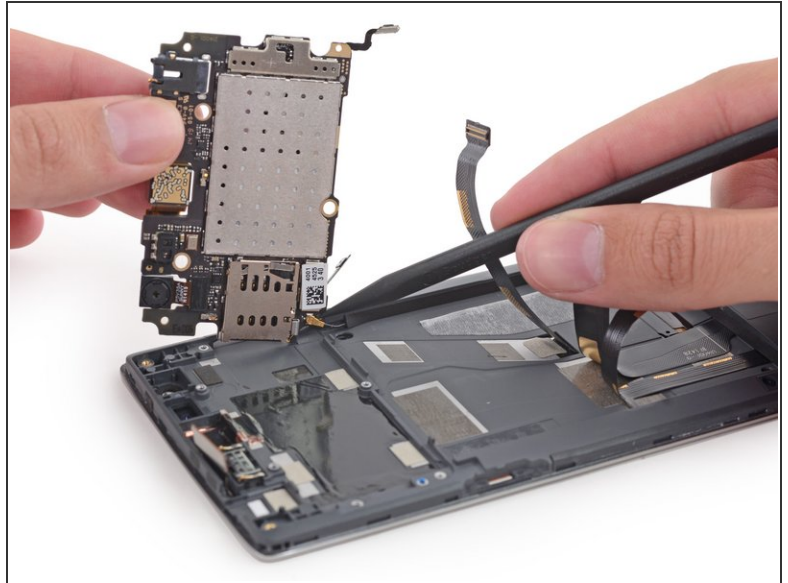
- We pull off an interior cover to access the battery connector. [If our calculations are correct](#), the OnePlus One's battery is about to be subtracted.
- Our spudger performs the necessary arithmetic, and the 3.8 V, 3100 mAh LiPo battery is ours (and yours) to inspect.
  - It fares well when compared to its 2800 mAh [\(Galaxy S5\)](#) and 2600 mAh [\(HTC One M8\)](#) rivals.
- For those of us who don't read Chinese, this battery sports a maximum charging voltage of 4.35 V, and the following warnings and cautions (paraphrased):
  - Only use with approved chargers
  - Keep ventilated while charging
  - Do not tear down, short circuit, or puncture

## Step 10



- Removing the motherboard requires disconnecting several connectors.
- Being as careful as we possibly could be, we use an [iFixit Tech Knife](#) (more commonly known as a K-nife) to detach the rocker buttons from the side of the panel assembly.
- ☑ As much as we love [using knives to cut into devices](#), we heavily advise against it in most cases.

## Step 11



- Finally, with all the connectors out of the way, the motherboard is—
- [Drat and double drat!](#) There's one last antenna connector on the back of this motherboard.
- ① Luckily, we disconnect it faster than you can add [1+1](#).

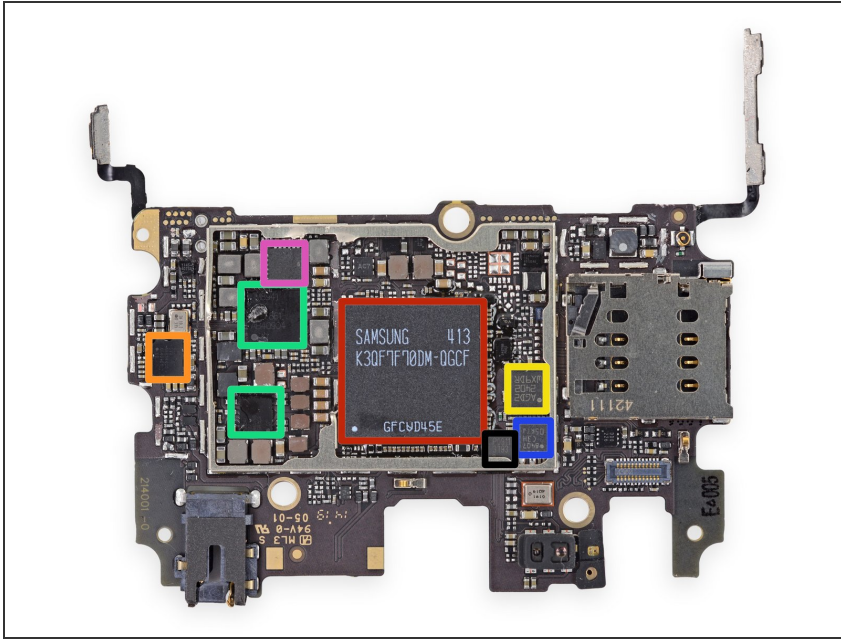
## Step 12



- Both the front-facing and rear-facing cameras are designed by [Sunny Optical Technology](#).
- The rear-facing camera is labeled P13N05A, while the front-facing camera is identified as P5V35A.
- We also encountered camera modules designed by the optimistically-named Sunny Optical Technology in the [Project Tango teardown](#).
- According to the details on the OnePlus One specifications page, the 13 megapixel rear-facing camera features a [Sony Exmor IMX 214](#) CMOS image sensor.



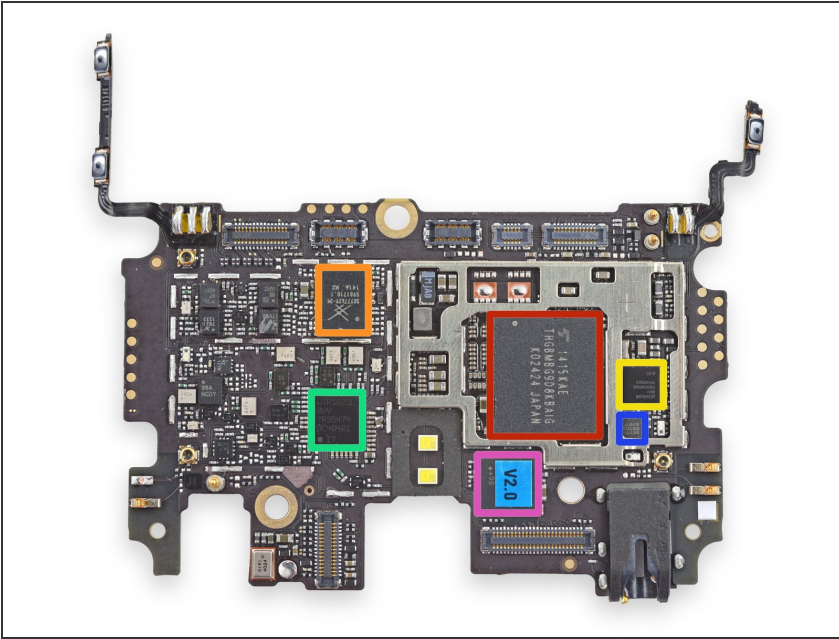
## Step 13



- [E pluribus unum](#). Here are the many chips that make up the One:
  - Samsung [K3QF7F70DM-QGCF](#) 3 GB LPDDR3 RAM; Qualcomm Snapdragon 801 likely layered beneath
  - Qualcomm [WCD9320](#) Audio Codec
  - AGD2 2402 WX9DR (likely gyroscope)
  - Qualcomm [PM8941](#) and [PM8841](#) Power Management ICs Quick Charge 2.0 capable
  - 8407 CEH 05KTJ
  - B02419
  - P0911 3193

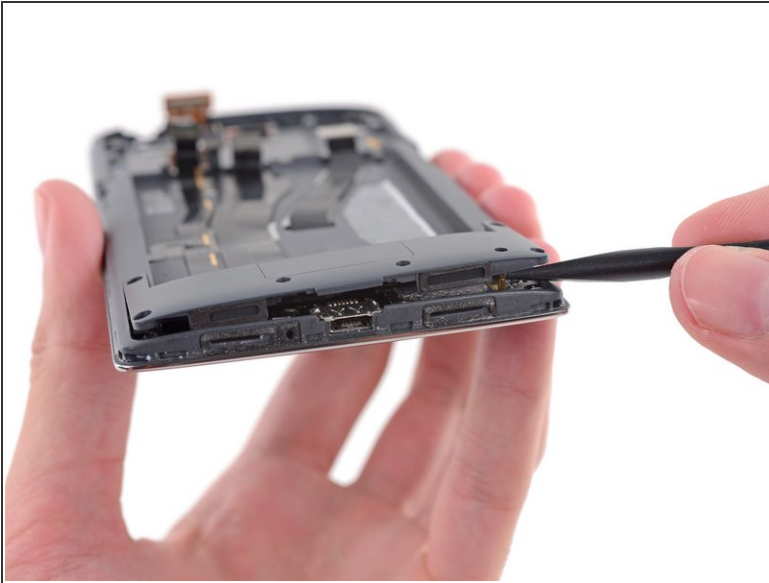


## Step 14



- We've quickly run out of snappy Latin catchphrases—but chips? Not even close! The backside of the board contains:
  - Toshiba [THGBMBG9D8KBAIG](#) eMMC 5.0 64 GB Onboard Storage
  - Skyworks [SKY77629-21](#) Power Amplifier Module
  - Qualcomm [WCN3680](#) 802.11ac/FM/BT 4.0 Combo Chip
  - Qualcomm [WTR1625L](#) RF Transceiver
  - Skyworks [SKY85709](#) WLAN Front-End Module
  - Synaptics S3508A Touchscreen Controller

## Step 15



- We shift our focus to the front panel assembly.
- Six screws (two of them hidden under more rubber plugs) and a flick of a spudger later, we've got the speaker assembly enclosure out.
- The OnePlus One features a set of Yamaha stereo speakers that connect to the motherboard via spring contacts.
- In the bottom center of the speaker assembly enclosure, we find a sticker that [changes colors when orcs are near](#). It also acts as a water damage indicator.


## Step 16



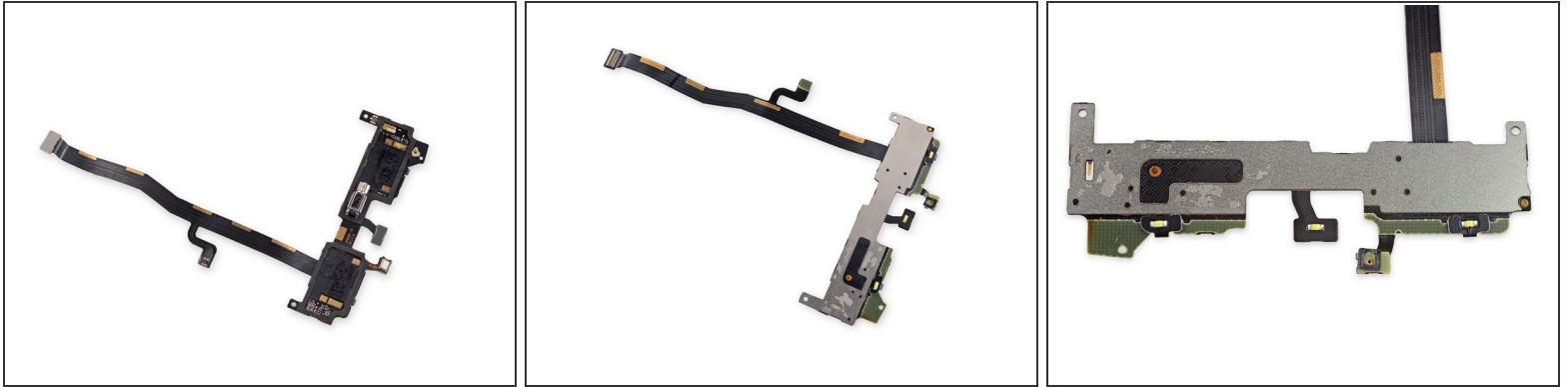
- Peeling up the USB port is easy enough, but it appears to be trapped under a slot in the midframe.
- Touché! It's not trapped at all! What we thought was a wall was in fact a strip of tape—peel that away, and we're home free.

## Step 17



- Oh no, this little cable offshoot is threaded under the midframe. We'll never get the daughterboard out—wait just a minute. Never mind.
  - In another exciting plot twist, this mysteriously chipped cable pops right out of its frame crevice.
-  This One has more plot twists than Star Wars has [family secrets](#).

## Step 18



- The daughterboard is finally [freeeeee as a daughterbirrrd](#), now.
- This daughterboard is the permanent home of various components, including the vibrator and primary microphone.
- Along the bottom of the daughterboard are three LEDs for the front panel assembly capacitive buttons. The LEDs fit into the light guides at the base of the display.

## Step 19



- Before moving along to display removal, we get to removing the super awesome earpiece speaker.
  - Here are the tech specs: [E3JE1HF](#)
  - [And now for something completely different](#). It's [iOpener](#) time!

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## Step 20



- With the display assembly stripped down to the midframe, it's time to test out a common repair: screen replacement!
- After some heat and a bit of prying with an [opening pick](#), we separate the display assembly from the midframe.
- It's not a fun job, but it's certainly easier than another [One](#) we opened up on our teardown table.
- The midframe bears the designation [PC+GF](#), indicating it was made of polycarbonate infused with glass fibers.
- We're a bit disappointed — we can't file it away and light it on fire, [like we've done in the past](#). Sadness.



## Step 21



## REPAIRABILITY SCORE:



- OnePlus One Repairability Score: **5 out of 10** (10 is easiest to repair).
  - No proprietary screws and only one screw head type decreases cost of tools for repairs.
  - Fairly modular components will allow for less expensive replacement parts.
  - Slight adhesive used on the battery and several cables.
  - With its connector trapped under a plastic panel and several screws, the battery is more of a chore to replace than necessary.
  - The LCD and digitizer glass are fused together and must be replaced as a single part, and they require heat to remove from the midframe.

To reassemble your device, follow these instructions in reverse order.